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School to work

Philip Venning looks at the Irish Republic's new work project

A spiral of jobs

Peter Mullins, general manager of Sow and Grow, is happy about the lettuce. A local supermarket buys them at 10p a head, and the company has already made £15, with another crop on the way. The bedding plants should sell well also, though the shrubs are a bit of an experiment.

What distinguishes Sow and Grow from other market gardens is that Peter, his fellow company managers and employees, are all second year pupils at St Patrick's comprehensive school, Shannon, in the Irish Republic. All their produce is grown in a plastic tunnel in the school grounds.

Over in the metal workshop, another company, SCAMP, made up of 16-year-olds, is hard at work making wrought iron plant holders and mug racks to meet an order from a local shop. Started with £50 share capital raised by adults, the company is doing so well that some of the boys are thinking of finding their own premises to carry on in the summer holidays. By careful marketing and quality control, the boys have been able to pay themselves wages of between £3.30 and £4.50 and will be repaying the share capital next month with a good dividend.

These two "minicompanies", with 23 others in 12 schools in the Shannon-Limerick area of the Irish Republic, are not some insidious attempt to restore child labour or to emulate a Chinese ideological experiment. Rather, they are one part of a highly successful curriculum development project, part funded by the EEC, designed to improve the links between schools and working life.

The philosophy behind the project is a belief that the community as a whole can offer children much richer learning experiences than the classroom alone.

In addition to the minicompanies, the project has encouraged the creation of groups of local industrialists, teachers, and others, who act as a liaison between school and the community. They have a central role in perhaps the most ambitious element of the project - community based learning.

This is an Irish version of an idea pioneered in the United States, which finds people in the community willing

to teach the young about the real world outside school. So far it has been run on a pilot scale for a small number of 16-year-olds, most of whom had little interest in school, but it could eventually be extended to more able children as well.

During a year, each pupil works with a succession of local employers of their choice - in a bookshop, a factory, hospital kitchen, or with a vet, for example. They also fix up meetings with adults who teach them basic "competencies", such as how to fill in a tax form or do first aid.

But these are not random visits with no more value than glorified work experience. They are something much more revolutionary, and depend on a carefully devised educational programme with quite deliberate educational objectives.

According to Edmond Fogarty, a teacher on secondment to SPIRAL (the EEC curriculum development project), the programme is based on four elements, and everything that is done during the year is designed to meet one of them.

In addition to basic skills, such as English and simple maths, the course emphasizes career development. The aim is not merely to help the pupil choose a career but also to acquire the personal qualities that all employers say they look for - punctuality, versatility, and reliability. The other two elements are "essential community skills" (such as how to cope with insurance), and "core skills". The latter stresses creativity, an understanding of scientific method, active citizenship, critical thinking (or "the sensible way to approach an issue" as it is presented to the children), and personal and social development.

These may seem rather high sounding ideals, but they provide the children's work with a coherent framework throughout the year. How are they realized in practice?

As a first step, pupils spend 15 hours over five days, exploring a series of careers. In each workplace, an adult tutor takes personal responsibility - the most essential part of community

based learning is that it is based on an individual child's relationship with an individual adult in the community.

This stage is just a taster. The pupil then returns to school, and his or her teacher works out a personal "learning venture", designed to meet that pupil's own particular needs and interests. If the pupil liked the first stage, he or she will then go back for a longer spell of at least three weeks for three hours a day.

Though most adult tutors like to give their pupils a specific job to do (a girl in an electrical retailer might have to sell light bulbs and torch batteries, for example), the main aim is learning. The personalized "learning venture" will consist of a series of worksheets which force the pupil to find out about how the shop works (including plans of the layout of displays), about the products on sale (how they are made, where they come from), and about the personal qualities needed for the job.

Michael Cronin is an adult tutor at Béalais-Saifaid, which makes aircraft equipment on the Shannon industrial estate. Since September he has had six pupils doing learning ventures, and, in spite of the time it takes (at least three-quarters of an hour a day), he is very much wedded to the idea. He is convinced that the pupils' motivation is greatly improved by being made to feel part of adult society, and he does his best to make sure they mix in with the normal life of the factory as much as possible.

The learning ventures are an individual choice: but pupils are also expected to work through a list of 15 "competencies", the sort of thing that every school leaver would find useful to know about adult life. They are taught by adults, and, for example, are given £10 to open a current and deposit account at a local bank. Then they have to write cheques, and change foreign currency.

Each school chooses its own list of competencies, but they are inevitably very similar - from such things as first aid, housework, and home electronics (wiring plugs, changing fuses, etc) to income tax, grooming and fire prevention. In most cases, the children have to fix up their own appointment with the adult, though sometimes the adult comes into the school. When the pupils are not out in the community on a learning venture or acquiring a competency, they return to the classroom to write it up, find pictures to stick into the folders they keep, make drawings, and look for other ways of illustrating their experiences.

They also write up their weekly journal, a completely confidential communication between pupil and teacher, which is designed to encourage the children to reflect on their previous week's work.

The teachers do not see themselves as conventional instructors, but more like university tutors who help a student organize his own work. They call themselves "learning managers" and the classroom a "learning centre" - not for the love of jargon but to convey to the pupils that this is something very different from normal school, even though the faces and the location are familiar.

Today's community-based learning has been tried in two schools - Shannon and the Presentation Convent, Limerick, where it was run very successfully last year. But next year it will be extended to six other Irish schools, two in Cork.

Sister Maire Ward, the principal of Presentation Convent, is particularly pleased with the programme, and has no doubts that it will continue once the guiding hand of the SPIRAL team disappears when the EEC project ends in 1982. She has seen dramatic improvement in the self-confidence of the girls, and in their attitudes to teachers and school.

Sister Maire is also pleased that she might have been expected to be hostile about such unconventional teaching methods. The only problem in Limerick has been finding enough willing adults. In practice, there should be at least two adults for each student; to



Fire drill for girls from Presentation Convent Secondary school, Limerick.

ensure a full choice throughout the year. Another complication is that a lot of employers are about four miles from the school and transport is not always easy.

Community-based learning owes much of its success to liaison groups, which bring together local industrialists (and trade unionists), teachers, and parents. Including enough parents in a way that they feel they have a real contribution to make to their child's movement from school to working life has been one of the most difficult parts of the project, according to Diarmuid O'Donnabhain, the SPIRAL director who is on secondment from his normal job as headmaster of Shannon comprehensive.

Each of the six liaison groups has a life and identity of its own. Last week, for example, the Shannon Group called together a meeting at which about 50 parents joined working groups to discuss the problems of getting a first job. Last year the group at Ennis did a survey on the same topic. In the summer the Kilrush group will be organising a community-based learning programme for about 10 unemployed young people. Another group is producing a community newsletter. The Limerick group has been particularly active with regular meetings on specific aspects of preparation for adulthood.

They all have helped find adult tutors for the community-based learning courses, and have played an important part in helping to set up the minicompanies.

The minicompanies scheme has involved more pupils of all ages and abilities than community-based learning, but on a more limited scale.

The number of minicompanies and where they slot into the timetable varies from school to school. One minicompany went into full-time production for two weeks, but more usually they are part of the ordinary curriculum. A horticulture company at Shannon is part of a science class, for example. Another is a games option. Home economics, art, and commerce classes provide opportunities for various manufacturing companies. Naturally, wood and metalwork classes are particularly suitable and many of the products, such as step ladders, stools, and coffee tables, have been made in the school workshop.

The basic rules of the minicompany are simple and apply in all schools. A group of about 20 pupils get together to form a company. They elect a general manager, a production manager, sales, finance and personnel officers, company secretary, and anyone else thought necessary. Then they decide what product they can make or service they can offer (one company organized a commercial "ride" fair at which the other companies sold their wares). They must then find a market, raise share capital of about £50 from adults. From then on it is up to them. They must decide how much to produce, how to modify their products, how to ensure quality control, how to

Measures to deal with falling rolls will destroy communities, warn unions

Half of NI primaries could close

by Paul McGill

Dramatic proposals to deal with falling rolls would close as many as 500 primary and secondary schools in Northern Ireland in the near future.

A Department of Education report, *Schools and Demographic Trends - a Backcloth to Planning*, gives a guide to the minimum size of school. Primary schools with fewer than four teachers and secondary schools with fewer than 280 to 300 pupils would disappear.

Two teacher unions immediately warned that the report could be the death knell of local communities and it is already clear that it will run into stout opposition from parents and councillors as well as those whose jobs are at stake.

The Northern Ireland Education Minister, Lord Elton, said the study would help education authorities to cope with the unprecedented fall in the school population. He added that a planned rationalisation was necessary "if we are not to waste valuable resources which could be put to better use in Northern Ireland".

The document was distributed last week along with a circular asking for consideration of the issue and for proposals for rationalisation. A timetable for planning will be discussed during a four months' consultation period.

The report points out that between 1964 and 1977 (respectively the post-war peak and trough years), the birth rate fell 26 per cent. Overall school



Lord Elton - "planned rationalization needed"

enrolments hardly changed, but both primary and secondary numbers are declining, and more than 31,000 pupils are to be lost from the rolls in the next 10 years.

The report raises the question of how to use the large public investment

in education efficiently. With continuing financial restraint, it points out the urgency of achieving the best arrangements of resources.

The DES says the report should not be regarded as a blueprint for planning schools throughout the Province since local involvement was essential in decision-making. Nonetheless, its factors and criteria should be considered.

It argues that the absence of particular skills and expertise in small primary schools may result in an unbalanced curriculum and that staff in one- and two-teacher schools are particularly strained. Urban schools should be merged if the enrolment is below 200; in rural areas where children may have to travel large distances the "minimum acceptable staffing" should be four teachers, representing an enrolment of about 100.

If implemented, this guideline would close 46 per cent of Northern Ireland's primary schools. January 1980 statistics show 41 schools with up to 25 pupils, 186 with between 26 and 50 pupils, and another 253 in the 51 to 100 range. Altogether, there are 1,057 primary schools, a drop of 199 since 1970, illustrating that a lot of mergers have already taken place.

The document gives 600 pupils - equivalent to 36 teachers - as the target for secondary schools. At this size the school may be able to ensure continuity in teaching, be reasonably certain of retaining specialist teachers

of shortage subjects and capable of providing in-service training and an acceptable career structure for teachers. Below this size it is difficult to meet the many needs facing the schools.

Again, the report accepts that this could mean large travel distances in rural areas. It looks not only at the desirable figure of 600 pupils, but also the "absolute minimum size" of a secondary school. It points out that at least 16 schools should be able to offer at least 16 subjects plus items like careers and counselling, health education and education in parenthood, making a minimum teaching force of 18 to 19 and an enrolment of 280 to 300.

Turning to 11 to 18 schools, the document recommends that at least 13 A level subjects should be offered to sixth formers, which requires at least 100 students, 50 in each year.

One aspect of the report welcomed by teacher unions was the movement towards a scheme for the deployment of members of the profession. Lord Elton already has announced that school staffing is to be cut by 250 before next September.

At present, a redundant teacher can be given a post in a controlled school if the management committee agrees. The report suggests that the education boards should be allowed to appeal to the DES if it feels that the committee is withholding its consent to a transfer unreasonably.

Multi-racial group plea to police

Police were asked last week to abandon special patrol groups and intensive policing of inner city areas by the National Association for Multi-Racial Education.

As an aftermath of the Brixton disturbances, the annual general meeting of the association called for more resources to pursue policies of equal opportunities which will improve the environment, educational and social conditions for the inner city communities.

The association also asks teachers to fight racism in and out of the classroom, and asks the Department of Education for curriculum development units to bring about fundamental educational changes needed in Britain's multi-racial society.

Career guide

Teacher Careers and Career Perceptions is not available from the North East London Polytechnic as stated in *The TES* last month. It can be obtained from NFER Nelson Publishing Co, Darville House, 2 Oxford Road, Windsor, Berks, price £6.95.

Schools' drive

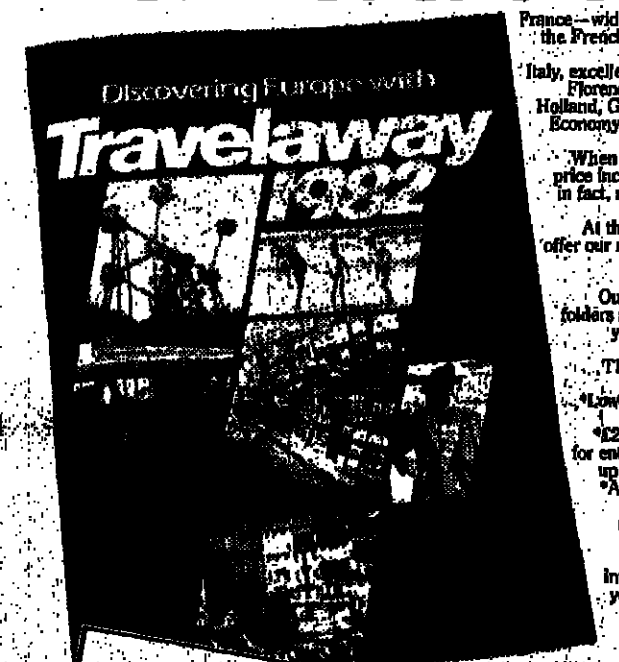
East Sussex county council is taking its anti-racism campaign into schools to warn children not to bring animals back from the Continent on school visits.

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Lincolnshire science venture

Lincolnshire is taking a national lead in trying to interest girls in careers in science and technology.

The county's education department is launching a pilot venture with the engineering industry training board and the engineering careers information service comprising of a series of one day courses for third year school-

girls. The courses are designed to give information about and stimulate interest in science and technology careers. They are aimed at girls who have the potential for GCE A-level studies, particularly in mathematics and science subjects. Eighteen schools have nominated a total of 120 pupils.

Mr Maurice Gardner, principal

carers officer, said: "It is considered that within the engineering industry there is a growing realization that the talents and abilities that women have to offer cannot be neglected. Particular emphasis must be placed on informing girls of the scope and opportunities available if they are to be attracted into industry."

The courses have been particularly aimed at third-year girls, aged around 14, who will soon be making choices about which GCE O-level subjects to take. "The subjects they choose can be an important factor in their eventual choice of career," said Mr Gardner. "This is particularly true with regard to professional careers in industry and engineering."

For Diarmuid O'Donnabhain, his team's task is now to ensure that this initiative does not collapse when SPIRAL comes to an end in 1982. Minicompanies can survive without too much central support or funding. But community-based learning is fragile, depending as it does on a substantial commitment from the local community - a commitment which was weakened once the novelty of the project faded and the project disbanded. The hope is that the liaison groups will survive to nurture the dialogue that definitely began between local employers, the community, the school, and, to a lesser extent, the home.

More responsible

Special offer

The 1981 edition of *Which Degree*, the sixth-former's guide to higher education services, policy not covered by a new Advisory Council for England (LACE) is to be strengthened. These will apply to a report of the Government Select Committee on Education and the British Library Service.

Courses



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Further details from Department of Social Sciences (Ref: 888) Polytechnic of the South Bank, Borough Road, London SE1 0AA. Tel: 01-928 8989 Ext. 2381/2.

POLYTECHNIC OF THE SOUTH BANK

West Germany/Susan Kirkman

Medics on strike against high exam failure rate

BONN: A high failure rate of 57 per cent in the preliminary medical examinations of March this year has brought German medical students out on strike.

The normally conservative medical students are protesting at what they consider an unfair and inappropriate examination system.

The preliminary examination is an accreditation requirement. A pass is necessary to obtain a hospital place for clinical training. For the past two years the failure rate has been between 18 and 25 per cent but in March this soared dramatically. At Aachen University, only 28 out of 160 students passed the examination, which is set by a central examining board in Mainz.

The percentage of failures does not include those students who could not even complete the test. Although 138 medical lecturers help the Mainz Institute to compile the questions, students and their teachers have criticized the difficulty and irrelevancy of the multiple-choice examination.

"Even I couldn't have answered all of the questions," commented Rolf Zander, Professor of Physiology at Mainz University and he condemned

the emphasis on "exotic" areas of medicine. One question dealt with the balance system of astronauts. "Are we living on the moon?" queried one medical association.

The results also seem to prove the unsuitability of the multiple-choice system as a means of assessing medical knowledge and some lecturers are suggesting the re-introduction of oral examinations.

The association of medical students has insisted on a return to the pass mark of 58 per cent instead of the 64 per cent level brought in two years ago to prevent falling standards. They also want the restitution of the "18 per cent rule", which awards a pass to all candidates whose results are less than 18 per cent below the national average.

The students see the high failure rate as an attempt to further restrict the number of doctors expected to flood the employment market in the late 1980s. The university entrance requirements for medicine are the highest for any subject and many students are bitter that after gaining the coveted place, they may still fail in their ambition.

Zimbabwe/Stephen Taylor

Bill bans white privilege

SALISBURY: After months of stormy debate, Zimbabwe's Parliament took just 10 minutes last week to approve the Revised Education Amendment Bill, enabling the Government to abolish community schools, which it has called "bastions of racism and privilege".

The first draft of the Bill had been passed by the House of Assembly but was rejected by the Senate on the grounds that it infringed the constitutional declaration of rights. The Bill was reworded but there has been no amendment to the principle which allows the Government to withdraw grants for salaries of teachers at community schools.

The 41 primary and eight secondary community schools were set up by parents' associations at white schools to avoid integration into the education system. The associations bought school premises, but teachers continued to be paid by the Ministry of Education.

Mr Dzangirai Mutumbuka, the Minister of Education and Culture, has not disclosed the Government's plans for the schools but they are expected to become clear over the next few weeks.

Australia/Bill Purvis

Scheme will 'innoculate' pre-teen smokers

SYDNEY: Alarming increases in the number of young smokers in Australia have inspired a revolutionary anti-smoking programme in Western Australian schools.

The programme, which will start in July, involves 2,500 pupils, aged 10 or 11 in 80 Perth schools.

Recent statistics compiled in Western Australia and other Australian states have revealed a surprising growth in the incidence of adolescent smokers.

For example in New South Wales a survey last year showed that about one third of 16-year-olds smoked at least one cigarette on most school days. This is more than double the figure of about 15 per cent of smokers in 1971.

The Western Australian programme is described as an "innoculation system". Instead of emphasising the harmful effects of smoking the pupils will be advised how to handle peer-group pressures and how to analyse cigarette advertising and its objectives.

The programme is being conducted by the National Heart Foundation with the co-operation of the state's education department.

Its implementation comes at a time when the public generally is displaying increasing concern about the apparent

failure of other anti-smoking measures.

Sports-mad Australian students see cricket, golf, football and tennis events sponsored by tobacco companies and doctors believe this associates their sporting interests with the sponsorship.

The Western Australian programme is based on the idea of approaching children at an age before they have started smoking and believe that they never will.

It will involve one period of one month for a trial period of six months. At the start of the programme children will fill out a questionnaire about their attitudes to smoking and then, if any, of their present smoking habits.

At the end of the year they will do another questionnaire. If the results are favourable the National Heart Foundation is expected to urge education departments in all states to implement a similar programme in all primary schools.

The programme includes the videotaped presentations of situations in which children might be put under some pressure to smoke.

The children and their teachers will then discuss how to say "no" to the cigarette and act out real life situations.



Military fears

'Leftist' books to be revised

TOKYO: A storm has erupted in Japan following a decision by the Education Commission of the State to revise school textbooks.

The decision follows a concerted campaign against the books by senior members of the ruling Liberal Democratic Party (LDP).

The conservative politicians criticized the texts as "leftist oriented". In particular, they objected to the manner in which the authors presented such topics as the Japanese constitution, the armed forces, the Japan-US security treaty, nuclear power, and the long rule of the LDP.

These are all explosive issues in Japan, where intense debate has continued since the end of the war over the possibility of a revival of militarism.

The books under fire are published by seven firms, and all have similar contents.

They state, for instance, that many people believe the Japanese armed forces violate the constitution (which says that Japan cannot create a military force except for purposes of self-defence).

The Yomiuri Shimbun, Japan's biggest daily newspaper, quoted some of the other passages which have been attacked.

According to one of the textbooks, "In the event of a war, the Japanese defence forces, under the Japan-US security treaty, will defend Japan, while the US forces stationed in Japan will undertake an attack on the enemy. But some people fear that Japan will become involved unwillingly if the US starts a war."

Another book says: "Nuclear power stations are beginning to be used for practical purposes, but the problem of radioactivity is frightening residents near the power stations."

The newspaper said the passage which most upset the LDP politicians was: "The government party has not changed in the past quarter of a century. For this reason the party has lost its sense of responsibility to the nation, and Parliament has become a scene of political stalling where the interests of the people are ignored. This is a problem which should be overcome."

The decision by the Association of School Textbook Publishers must be approved by the Ministry of Education, but this is expected to be automatic, and the revised books will probably be ready by 1982.

But the decision has been bitterly opposed by the Japan Teachers' Union, by trade unions representing publishing workers, and by various civic groups.

They object to the fact that the association made its decision under pressure from groups outside the educational field.

In addition, Mr. Morihumi Matsuda, chairman of the teachers' union, said that it was important that school texts be based on truth and be free of ideology. He said the books currently in use were politically neutral.

He expressed his fears that revision would lead to the teaching of right-wing doctrine in Japanese schools.

United States/Clive Cookson

Young disadvantaged better at reading

WASHINGTON: American elementary school pupils could read better in 1980 than 10 years earlier, and the improvement was particularly dramatic amongst children from disadvantaged backgrounds.

But the gains slipped away in high schools, and today's 17-year-olds performed slightly less well than their counterparts in 1971.

The National Assessment of Educational Progress (NAEP) reported these findings last week, on the basis of surveys of pupils' reading skills in 1971, 1975 and 1980. In all about 100,000 children were assessed.

The project is funded by the federal government but conducted by the Education Commission of the States. The assessment showed clearly that there had been a spectacular narrowing of the gap between the worst readers—nine-year-olds from poor and black families—and the rest—middle class 17-year-olds. In January the NAEP released its companion survey of writing skills, which indicated a similar trend (TES January 30).

The average reading performance of

black nine-year-olds rose by 10 percentage points between 1971 and 1980, one of the largest gains ever found by the NAEP. Whites improved by three per cent at this age, though those from disadvantaged urban and rural areas made more progress.

The panel of 14 educationists and reading experts assembled by the NAEP to interpret its results gave credit for the nine-year-olds' improvement to the federal government's educational programmes, which are concentrated most heavily on elementary schools in disadvantaged areas.

Democratic Representative Carl Perkins, chairman of the House Education and Labour Committee, immediately seized the assessment as political ammunition against the Reagan Administration's plan to cut federal aid to schools by 25 per cent and amalgamate categorical programmes into block grants (see following story). "I think it would be exceptionally foolish to cut back on these programmes now, when we are seeing

some real improvements," he said. And the Republican chairman of the Senate education subcommittee, Senator Robert Stafford, agreed that the "assessment suggests that Title I is being correctly targeted and is narrowing the gap between targeted and non-targeted populations."

(Title I of the Elementary and Secondary Education Act is the main federal programme of compensatory education for the disadvantaged.)

Aside from the inflow of federal funds, the panel of experts agreed that primary schools' increasing emphasis during the 1970s on systematic "objectives-based" reading instruction probably helped the nine-year-olds, as did the general back-to-basics movement.

But many educators felt at the same time that the renewed emphasis on basics in high schools was responsible for holding back the 17-year-olds. They were particularly concerned by the revelation that the 17-year-olds declined by a significant two per cent on the "inferential comprehension" section of the assessment; this is the

part that measures ability to draw conclusions and create new ideas from what the students have read.

Professor Anthony Petrosky of the University of Pittsburgh reflected the general feeling of the panel with his interpretation that the NAEP results were "signalling deteriorating resources and instruction for those higher-order intellectual abilities that go beyond basic skills. If these trends continue into the 1980s, then it seems plausible that we are failing to give these students anything but basic skills," he said.

NAEP director Roy Forbes reiterated the warning: "We must be careful that, at a time when minimal competencies are being emphasized, we do not allow the 'minimums' to become the 'maximums' that we ask of our students," he said. "In my opinion the reading data for older students indicate that the challenge of the 1980s will be to teach students how to use basic skills, in reading as well as in other areas, in more complex problem-solving and critical thinking activities."

Patti Waldmeir on a West African schooling experiment

Balance sheet of Benin's revolution

Along the beach road in the tiny West African republic of Benin stand four makeshift straw huts, put up earlier this year by villagers to house their new secondary school.

All over Benin, similar schools are going up in a massive effort to extend primary and secondary education to as many as possible of the Republic's 3.5m people.

In June 1975, President Mathieu Kerekou's Marxist-Leninist Government promulgated a National Educational Reform Law meant to revolutionize the structure of education at all levels and to raise the percentage of primary school age children in school from 41.5 per cent in 1975 to 61.3 per cent in 1985.

By the end of the 1979/80 academic year, primary schools were educating 50 per cent of school-age children, quite an

achievement for a country where 50 per cent of the rural population is estimated to live below the absolute poverty level as defined by the World Bank. Secondary school enrolment increased by 60 per cent between 1977 and 1980.

The aim of the 1975 reform was, however, only partly to increase absolute numbers. In school, Benin's radical educationists saw the reform as an integral part of what they called the "global transformation" of their society along the path of socialism chosen by Colonel Kerekou some six years ago.

A programme of reforms partially financed by the United Nations Development Programme, which gave about £1m over six years, was instituted to change the heavily urban orientation of the educational system inherited from the

French.

The school curriculum has been radically changed. Each school has been designated a "productive unit", with students being required to engage in about four hours or co-operative productive or commercial activity each week.

Students co-operatives produce and market a wide range of goods from local foodstuffs to craft articles such as traditional batiques and appliques. They even organize sports matches and charge a handsome entrance fee to meet their production quota.

"Ideology" is now taught in the schools, with a heavy emphasis on Marxism-Leninism and "civic and moral instruction".

Teacher training has also been decentralized, with the construction of one new teacher training college in each of the country's six regions. Teacher trainees receive "civic and military" as well as traditional pedagogical instruction.

To staff the many new schools built since 1975, a system of national service for university students has been introduced. After completing their second year at university, students are sent to teach for one year in rural secondary schools.

Even so, the Beninese have had to fall back on a large number of "pupil teachers"—secondary school graduates with no university education—to maintain adequate staffing levels.

Critics of the reform argue that, despite the impressive increase in school enrolment, the educational system has more than kept pace with the country's relatively high



Skills for a rural environment...

population growth rate of 2.8 per cent a year—there is a yawning gap between the theory and practice of the reforms.

One of the biggest barriers to a true reform of the educational system is the difficulty of obtaining new textbooks in a country with little foreign exchange to purchase them, and few printing presses of its own to produce them.

Flagging morale is also a problem. Teachers say they find it hard to maintain their commitment to receive (roughly £60 per month they get for a primary school teacher) is barely sufficient to live on.

Inadequate pay is said to have motivated an exodus of teachers to Niger, where salaries are two and a half times higher.

Primary school teachers are also unhappy about a decision taken by the Government to force them to

join a single trade union. Previously teachers had had a choice of union representation, but when some members of the old union protested at the Government's move, they were arrested and detained.

The students' commitment to the reforms is said to lag even further behind the teachers'. As the profile of a university entrant demanded by the University of Benin has not been significantly altered in line with the reforms, ambitious students tend to prefer the conventional curriculum.

The reformers have also reported conflicts with local artisans and teachers, who dislike the competition of the students for a limited local market.

By far the most common complaint, however, is that educational standards have declined as a result of the reforms.

Ivory Coast/John Gretton

Primary teaching by television is abandoned

In a move that is likely to have dramatic repercussions on distance teaching schemes in the third world, the Ivory Coast has decided to put an end to a 12-year-old nation-wide experiment in television teaching.

Announcing this recently in a meeting with teacher union representatives, President Felix Houphouët-Boigny said: "Even if we were satisfied with the education being provided, we would now say to our friends who gave us this present that it is costing us too much."

Along with Samoa and El Salvador, the Ivory Coast is one of the very few countries to have used television for primary teaching throughout the country.

The experiment was launched in 1969, to fulfill the President's target of "primary schooling for everybody". In 10 years, the numbers enrolled in state schools rose two and a half times to just over 800,000 (out of a total population of just over seven million).

After two years' initial planning, television teaching was introduced in 1971. Adult programmes started two years later, and by 1975 more than 5,000 classes in five primary grades were using television. A special curriculum was designed, and radio and printed back-up materials were provided.

Opposition to the project came mainly from the teacher unions who, in 1980, passed a motion calling for "the total suppression of television teaching". This heralded the start of a

nation-wide debate on the merits of the system, and led to public criticism of Pascal Dikébié, Minister for Television Teaching.

Despite this, the Minister survived a government reshuffle earlier this year, only to find his job, if not his post, removed by the President's appointment.

Critics centred on the cost of the scheme, and the quality of the teaching. Though most of the teachers were indigenous, technicians tended to come from France, and the system had been devised.

The decision by the Ivory Coast to bound to create further doubt about the merits of what has come to be known as "distance teaching" as a means of providing instant education in the third world.

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Letters

Young need training, not compulsion to do good

Sir—The sanity of The TES editorial (April 24) denouncing woolly thinking about national community service as a solution to youth unemployment was welcome and refreshing.

It is no secret that Alec Dickson of CSV has favoured a system of compulsory community service for many years. We now have Professor Ralph Dahrendorf in support, and people who claim to be libertarians like David Steel and Michael Meacher agreeing that we should debate the desirability of compulsion. Added to this The Observer has provided us with an opinion poll which tells us that the majority of the population favour the idea. I would begin to think that this was an unstoppable bandwagon if the idea were not so stupid and dangerous. I can only conclude that many people of normal sense and goodwill have not thought through the consequences of this proposal.

Compulsory community service would be profoundly antilibertarian. Just imagine how reluctant recruits might behave towards those they are being forced to help! It is quite simply a contradiction to force people to do good. Some argue less honestly that we should compel by stealth. Entry to academic courses should be easier after service. Supplementary benefit might be docked if service is refused. The objections to compulsion apply equally to stealth. One can imagine the tribunals where young people argue the need to stay at home to look after parents, neighbours, siblings and grandparents.

Ralph Dahrendorf argues that all should be willing to give a year's service to their country. Indeed so, but there are nearly three million people, almost half of them under 25, who would clearly like to do just that. Instead they are to be forced to help for £14 per week.

Public sector workers who are currently losing their jobs are also likely to be less than enthusiastic about the proposal.

The second major objection to this proposal is that it confuses the growing consensus about the need to expand education and training opportunities for 16 to 18 year olds. The young who are most vulnerable to unemployment are those with few qualifications. In the past 40 per cent of young people left school at 16 and received no education and training for the rest of their working life. They became the unskilled and the low paid. Unskilled jobs are already disappearing and the process will soon accelerate as robots take over. If we do not provide more education and training to this group of young people, they will have no place in the society of the future. The country will also lack the skilled and flexible workforce that it will need. Already Britain provides less

education and training for this age group than any other developed country.

In November Mr Prior promised to work towards the provision of vocational preparation for the whole of the 16 to 18 year old age group. He also said that YOP would be converted into a high quality education and training programme for all 16 to 18 year olds without work. This promise, if implemented, heralds a radical educational advance for a group who have traditionally got very little out of the educational system. Now Youthcraft wants to snatch away this possible gain and instead to spend the money which has been allocated to the young unemployed on compelling them to do good.

Particularly as we found that situation was not isolated, but teachers on other islands had similar experiences and we came to realise that we could not work for a while which apparently condones and encourages racism. It may be true that teachers enjoy their stay in the Bahamas, but it is becoming harder and harder to work with any kind of professionalism and dedication. I urge those considering taking up positions there to search the situation fully before making a commitment.

J. THOMAS,
5 Bridge Way,
Seabrook,
Hythe, Kent.

In-service exercise

Sir—This Spring term, like many before it, has been fraught with difficulties arising from staff shortages from oral and practical examinations, meetings of consortia and from a service training.

The Secretary of State, Her Majesty's Inspectors, and the Department of Education all expect us to overhaul the secondary school curriculum within any of them pumping more money into the system. We need a master service exercise with help from each other, from colleges of higher education, universities, polytechnics, employers and first class pedagogues.

We urgently need to regard the work of the classroom teacher in the classroom as of fundamental importance and we ought to ensure that when the school is open for pupils attend there are no other alternatives for the teachers.

It seems to me that this can only be done with an agreed restructuring of the organisation of examinations and of in-service training.

For a start, let us agree that the number of days on which the schools are open for pupils each year is reduced to 190 and that teachers agree that they should (contract to) give at least 10 days each year to in-service training and other professional requirements.

Let us agree that each secondary school should sustain its own in-service training programme for five consecutive days each school year. Let us agree further that every teacher should give five days each year, *more or less*, when the teacher's school is open to other educational activities such as oral examinations, practical examinations, moderation of examinations, subject teachers' associations in-service training, professional in-service training or examination board meetings. For these activities there should be no additional payment—other than expenses—of the i.e.a. or examination boards.

Let it be further agreed that examination boards will arrange for their programmes outside the school education authorities agreed times.

Let it also be agreed that examination boards should consider and pay independently for their own examinations, appoint their own invigilators and supervisors (even if they are teachers).

There would be no need for adjustments in salary. The in-school and in-service training should correspond to the loss of other training of teachers undertaking training days. Examinations would be paid either by the local education authority (for in-service training) or by the examination boards (for marking, moderating etc.).

It would help if teachers were to be encouraged to retire at 60 and to undertake many of the examination boards' duties and responsibilities. I invite readers to send me a postcard if they support or disagree with what I have written. If the response is remarkable I will write to TES again.

Aid less able by integrating maths

Sir—While the views expressed by Douglas Quaidling in his address to the Mathematical Association ("Time for some children to stop learning mathematics" April 17) will undoubtedly find support among hard pressed mathematics teachers, not least because of the pre-eminence of the speaker, I think that a retrenchment on the scale suggested would be fundamentally wrong.

Economic grounds aside, by stating that "For children with an academic turn of mind or for children who recognise a specific need to acquire mathematical skills it is right to regard mathematics as a subject within the curriculum", subjecting the less able, Douglas Quaidling is effectively saying, at worst, that we have nothing to offer less able pupils and, at best, that we may be able to offer specialist advice, when the need arises, in some other main course of study.

The HMI secondary survey highlights the extent of the problem of suitability of courses for the less able (60 per cent of secondary schools need to reorganize courses) and points to the personal qualities of the teacher as the most important item in its recipe for success. In these circumstances any head of department ought to be excused a feeling of giddiness when planning ahead. It is very tempting to see Douglas Quaidling's argument as an escape hatch when the alternative requires the expense of positive discrimination and hard work.

While the merits of integrating mathematics into a broadly based main course of study are highly desirable, and not only for the less able, the stumbling blocks are many, in the form of empire building, arranging meeting times, methods of monitoring and assessment, ideal timetable, room and equipment allocations; accept statements of aims and objectives and above all, teacher commitment. I feel that a solution along these lines would require more in the way of external initiatives than is the case at present.

Douglas Quaidling's solution would serve to heighten the sense of deprivation already keenly felt by many less able pupils and the opportunity to achieve two broad curricular aims (i) That all pupils leave school equipped to deal with mathematical aspects of living (ii) That pupils continue to find enjoyment in mathematics after leaving school, would be diminished. I am not suggesting that these aims are not achieved now but that there is no reason for their abandonment. From a teaching point of view, it seems to me, that the problems associated with less able pupils represent one of the great remaining challenges, sorely in need of a fresh impetus.

If I may make a final point, there is a degree of inevitability about computer education being carried out by mathematics teachers in the short term. No doubt the time will come when the computer will be treated like any other audio visual aid. It would be hastened if the software were to appear more readily. I would also be surprised to find a computer studies course outside of a public examination course (where the syllabuses are dictated by exam boards) that emphasized Charles Babbage,

machine code and binary arithmetic. DR. MICK RUDDY,
24 Poplar Grove,
South Bank,
Middlesbrough.

Sir—Like all newspapers, The Times is sometimes caught in the trap of misquoting or taking statements out of context. We hope that such is the case with the front page coverage in the April 17 TES of Douglas Quaidling's presidential address to the Mathematical Association.

Let us say from the start that we agree, collectively, with the comments made about computer studies. Somehow it seems novel to teach topics such as "the Computer in Society", or a potted history of Babbage et al. Novel but of limited value. Even so, we have introduced computer studies as a fourth form option, offered across the whole ability spectrum and for all possible examinations.

The reasons for so doing rest firmly in the ideas behind the design of the curriculum in a comprehensive school, and we will not go into them now. Surely one of the faults with computer studies, as it seems to be developing as a subject in its own right, lies in the nature of the syllabus laid down by the various examining boards. We like so many other schools are restricted in the scope of what we can do, offer to children and develop by the severe limitations of resources, especially the hardware.

Teachers of mathematics in comprehensive schools are under pressure. Pressure that can bring headaches, moments of tension and nights of lost sleep. We have taught, and teach, unmotivated, indifferent remedial and disturbed children. Working with them in a positive way is seldom easy.

Some experiences leave children with lives that are more than a little tarnished, to say the least. Accepting the job of teaching them, which is precisely what we do when we seek a job in a comprehensive school, is a long, long way removed from the traditional academic view of the mathematics teacher in a grammar school. It is always the children we teach, mathematics, the medium we use to teach them.

A few years ago there was a belief that we needed to make mathematics seem more relevant. That to capture the spirit of the would be hardworker we needed to relate geometry to perms, or that footballers would see the value of applying trigonometry to goalkeeping angles; and there were many other examples of mathematics in real life, or mathematics across the curriculum.

In theory all seemed well. In practice it did not quite work out as theory had suggested; for reasons that the hardworkers and footballers knew only too well. Teaching anything to children is about capturing their spirit and touching their emotions. We doubt if much of the practical applications of mathematics will do that for a lot of children.

We are conscious of the need to produce more mathematics teachers of quality. We are also aware of the pressures, pains and joys of working in a comprehensive school. However we think it is no solution to put forward a solution which hints at "stop teaching certain children". Anyway, if the mathematics staff does not teach the unmotivated adolescents, who will and what will they do with them?

Mathematics is one of the most exciting and creative of all human activities, which has played a vital role in the development of human culture. The problem as we see it is not one of deciding which children we should teach it to, but rather a case of how we can create an atmosphere and method presenting the subject so that all children can see the vitality, excitement and richness of the subject.

Over the past two decades there have been changes in the mathematics curriculum. Those changes have affected what teachers teach, but the question of how to present the material has been left largely untouched.

In too many classrooms the subject is still presented in a manner which is unlikely to appeal to a good many children. Considering ways of making it appeal, of inspiring the dull and motivating the unmotivated must surely be the prime tasks of a teacher.

At a time when there is an air of depression surrounding mathematics teaching and working in schools, we ought to be standing on platforms attempting to inspire the generations following us to take up the challenge of working in schools with children, all children. To be sure there is room for much improvement in school, improvements that will only come through enticing people of vision to work in them and with them. The work is demanding, the hours long and the pay not as good as we would like. But it is a challenge, and one that can bring moments of great passion.

In retrospect we are sorry that we were not present at the Mathematical Association Conference, where we would have liked to have heard Douglas Quaidling's address first hand, so that we could make our own judgments as to its content. Certainly some of the things printed in The TES could have had harmful repercussions. These views are our personal ones. In no way do they necessarily reflect those of our authority, school or colleagues.

DAVID KENT, ROBERT DE BRICK and VINCENT SPENCER,
Dept. of Mathematics, St. Thomas More School, Allenton, Derby.

Sir—The title of the article "Computer may mean less maths staff" (April 17) fills me with horror. Is this science fiction, or do you know of some unpublished research showing that computers may stunt physical growth and be the cause of a race of diminutive mathematics teachers? Maybe the House of Commons select committee were given the vital information? I can imagine that the teaching of computer studies by mathematics staff could well mean that there will be fewer mathematics classes, but I am sure that the only thing likely to be less about the remaining mathematics teachers is their status compared with that of computer teachers. It is unfortunate that, in the same column, there is mention of the evidence given to the select committee by the National Association for the Teaching of English, referring particularly to "precision and accuracy in using words".

DR. G. TABBRON, Head of Faculty of Science and Technology,
Bolton College of Education
(Technical),
Chadwick Street,
Bolton.

Police response

Sir—On Friday and Saturday 10 and 11 April, 180 delegates to the study conference of the Community Education Association held at the College of St. John and St. John in Plymouth listened to John Anderson, Chief Constable for Devon and Cornwall, and his colleagues as they explained the rationale behind the community approach to policing which is operational in that part of the country.

many senior police officers who do not share their point of view. A policy of rigorously enforced law and order can succeed only where there is cooperation by the community and where large sections of society do not feel alienated. Where experienced police officers, aware of the needs of particularly sensitive urban areas, appreciative of the difficulties faced by ethnic minorities and knowledgeable about the areas they police, are accepted genuinely as members of that community, the risk of violence is considerably less.

The society we have created in 1981 with racial discrimination and unemployment built into its very fabric is very different from that of the sixties or even of the early seventies. Let the

police force of the eighties respond by developing its relationships with young and old alike through schools, youth centres, social clubs, schemes for young unemployed people, pubs and every other available point of contact. We must bring down barriers and encourage social cooperation. This can be achieved only if the police authorities as a whole bring about changes in their methods and establish positive links with the communities they serve.

ROBIN WINN,
Chairman,
The Community Education Association,
c/o Barr's Hill School and
Community College,
Radford Road,
Coventry.

No connection

Sir—We refer to the article by Mr. Richard Garner "Travel Firm Closed by Court" in the TES April 17. We should like to point out that the School Travel Services Ltd. referred to in the article (The correct title of the firm in question was Draper School Travel Services—see Correction in TES, May 1—Editor) has no connection whatsoever with our association member School Travel Service Ltd. of Enfield.

One of our association members has received adverse publicity as SAGTA, has only recently expressed anxiety at the lack of bonding in travel companies. We are extremely concerned at the increasing number of people becoming involved in school travel, many of whom have neither the experience to do the work effectively nor the financial backing to offer guarantees, such as those provided by SAGTA members.

The School and Group Travel Association Ltd (SAGTA) is an organisation of specialist school tour operators, all of whom must substantiate the requirements of stability, expertise and integrity and all of whom must be bonded. When a non-bonded firm collapses clients have no access to any outside funds for assistance in arranging alternative tours or repayment of monies lost.

We cannot emphasise too strongly that all arrangements should be made with a bonded tour operator. Parents, children and teachers alike will then be protected.

J. ROLLASON
Publicity Committee, The School and Group Travel Association, c/o NHA Travel, 14 Southampton St, London WC2.

Sir—The TES report (April 17) of the financial failure of a coach company which had contracted to take school groups to the Continent highlights once again the dangers to which schools are exposed if they book with unbonded operators.

It is of course very sad that children should lose their planned trips; but perhaps more teachers will now realise how important it is for them to book school tours with ABTA-bonded operators.

The ABTA (Association of British Travel Agents) bond guarantees financial security. I hope all your readers will bear this in mind when booking tours for 1982; then they will not face the embarrassment of having to explain to parents the loss of hard-earned money or, even worse, the stranding of a party abroad.

The majority of reputable school tour operators are not only members of ABTA and therefore

Go for micros

Sir—In her otherwise excellent review of computing in primary schools (TES) Virginia Makins implies at one point that it might be worthwhile to invest in a disc system to cut down on the waiting time when finding and loading programs. This is unsound advice, in my view.

If C10 or C12 tapes are used, with one program each side, it rarely takes more than three to four minutes to find and load a program. The gain in reducing this time to zero must be offset against the cost of a disc system. In most cases one can buy one (and usually two) complete microcomputers for the cost of a disc system (not to mention the additional cost if two or more existing micros are to be hooked up to the system. Seen in this light, the gain is just not worth it.

A disc system becomes really desirable only when one regularly requires to store and process large quantities of information (administration is a typical example, and a large data base for C.A.L. which Ms Makins mentions, is another) or in secondary schools where A-level Computer science is taught. But even in these cases the prospect of two more computers is a very tempting alternative, and from the perspective of the school as a whole this alternative is almost always more educationally justifiable. Disc systems would have to become relatively very cheap for their purchase to be a sound investment in most cases.

So my advice to schools, primary and secondary, is to concentrate on getting as many micros as possible.

IAN BIRNBAUM,
Head of statistics and computing,
Ramsey Abbey School,
Huntingdon, Cambs.

Nursery status

Sir—With reference to Rosemarie Court's comments (letters, April 24), on my Talkback article there are certain points I should like to clear up. First, I stand corrected over the social work qualification required for matrons of day nurseries. I did indeed mean the Certificate of Qualification in Social Work.

Ms Court's nursery nursing students may well feel "privileged" to be entrusted with the supervised care of children who may be physically, mentally or socially handicapped but we have found qualified and experienced nursery nurses to be more cynical, even disillusioned, (justifiably so) about the status afforded by society to those working with disadvantaged preschool children.

I have not forgotten about nursery teachers I was referring specifically to the problems that their differing working conditions have caused in the effective running of combined nursery centres. I can only agree though, that the career prospects for nursery nurses in schools are non-existent; let us hope that the proposals for modular specialist courses put forward by the NNEB panel of inquiry will go towards alleviating this.

I have not forgotten about nursery nurses working in other settings, eg the Health Service, but my article was concerned specifically with nursery nurses in day nurseries.

Clare Short

Sir—All letters will be treated in strict confidence. VALERIE RICHES
The Responsible Society,
Vickon, Milton Keynes.

No fun in the sun

Sir—I read your article on teaching in the Bahamas (April 10) with interest as my husband and I have just returned after working half of a three year contract there. The considerable financial loss involved, and the uncertainty one returns to must surely show the strength of our antipathy. And we are not alone: five out of eight expatriate teachers in our settlement have left, or expect to leave before the end of this academic year and others hope to leave when personal commitments allow.

It is somewhat fatuous of Mrs. Archer to suggest that the dissatisfaction might largely be due to the difficulties in adapting to small communities on the part of teachers, and misunderstanding on the part of community members. All of the teachers involved had experience of teaching abroad before the majority in the "Third World", and some in several countries. No, it was not the lack of facilities, equipment or facilities which was distressing; we expected that. It was the contempt with which we were treated by the Ministry of Education, and its officers. "Teachers are pawns" we were told by one senior official, and could therefore be moved at the whim of the ministry. No account was taken of educational continuity, needs of students or teachers in these moves, they were "policy". The ministry had no qualms about withholding people's salary for four months. We were fortunate in having savings but one couple had to live on one dollar a day for weeks. Mistakes happen in all systems, but the remarkable recurrence of this situation became heart-rending as we saw new, inexperienced people literally below the breadline, or involved in expensive bank loans.

From most of the ordinary members of the community we met kindness and confusion. They were disturbed at how much the schools had deteriorated of late. Those who could afford it sent their children to private schools. One could not but support the Bahamas Union of Teachers' strike for improved conditions, particularly on the "family" islands. If we expatriates had not honoured their picket lines, the strike would have been less effective as we were in the majority (eight to five at our school). As we were also Union (BUT) members what else could we do?

When the Principal displayed a poster which read "English teachers home" we were upset. When the Ministry took no action, and indeed continued to use him as their representative, we could only assume that he reflected their view. After suffering months of mental stress because of his

harassment, we took his advice. Particularly as we found that situation was not isolated, but teachers on other islands had similar experiences and we came to realise that we could not work for a while which apparently condones and encourages racism. It may be true that teachers enjoy their stay in the Bahamas, but it is becoming harder and harder to work with any kind of professionalism and dedication. I urge those considering taking up positions there to search the situation fully before making a commitment.

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Moral questions

Sir—The Responsible Society—Family and Youth Concern is conducting an investigation into the role of parents in sex education in schools. We would appreciate information from parents on some of the following points:

● are you told in advance and given full information about the content of sex education to be given to your children?

● are you enabled to inspect the material to be used and to question the teachers about the material on which class discussion will be founded?

● are you allowed to withdraw your children should you disapprove of the sex education to be given?

● have you found that the sex education given to your children has gone against your beliefs?

● have you noticed any behavioural changes in your children following the sex education given?

Ms Court's nursery nursing students may well feel "privileged" to be entrusted with the supervised care of children who may be physically, mentally or socially handicapped but we have found qualified and experienced nursery nurses to be more cynical, even disillusioned, (justifiably so) about the status afforded by society to those working with disadvantaged preschool children.

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South Bank,
Middlesbrough.

Sir—Like all newspapers, The Times is sometimes caught in the trap of misquoting or taking statements out of context. We hope that such is the case with the front page coverage in the April 17 TES of Douglas Quaidling's presidential address to the Mathematical Association.

Let us say from the start that we agree, collectively, with the comments made about computer studies. Somehow it seems novel to teach topics such as "the Computer in Society", or a potted history of Babbage et al. Novel but of limited value. Even so, we have introduced computer studies as a fourth form option, offered across the whole ability spectrum and for all possible examinations.

The reasons for so doing rest firmly in the ideas behind the design of the curriculum in a comprehensive school, and we will not go into them now. Surely one of the faults with computer studies, as it seems to be developing as a subject in its own right, lies in the nature of the syllabus laid down by the various examining boards. We like so many other schools are restricted in the scope of what we can do, offer to children and develop by the severe limitations of resources, especially the hardware.

Teachers of mathematics in comprehensive schools are under pressure. Pressure that can bring headaches, moments of tension and nights of lost sleep. We have taught, and teach, unmotivated, indifferent remedial and disturbed children. Working with them in a positive way is seldom easy.

Some experiences leave children with lives that are more than a little tarnished, to say the least. Accepting the job of teaching them, which is precisely what we do when we seek a job in a comprehensive school, is a long, long way removed from the traditional academic view of the mathematics teacher in a grammar school. It is always the children we teach, mathematics, the medium we use to teach them.

A few years ago there was a belief that we needed to make mathematics seem more relevant. That to capture the spirit of the would be hardworker we needed to relate geometry to perms, or that footballers would see the value of applying trigonometry to goalkeeping angles; and there were many other examples of mathematics in real life, or mathematics across the curriculum.

In theory all seemed well. In practice it did not quite work out as theory had suggested; for reasons that the hardworkers and footballers knew only too well. Teaching anything to children is about capturing their spirit and touching their emotions. We doubt if much of the practical applications of mathematics will do that for a lot of children.

We are conscious of the need to produce more mathematics teachers of quality. We are also aware of the pressures, pains and joys of working in a comprehensive school. However we think it is no solution to put forward a solution which hints at "stop teaching certain children". Anyway, if the mathematics staff does not teach the unmotivated adolescents, who will and what will they do with them?

Mathematics is one of the most exciting and creative of all human activities, which has played a vital role in the development of human culture. The problem as we see it is not one of deciding which children we should teach it to, but rather a case of how we can create an atmosphere and method presenting the subject so that all children can see the vitality, excitement and richness of the subject.

Over the past two decades there have been changes in the mathematics curriculum. Those changes have affected what teachers teach, but the question of how to present the material has been left largely untouched.

In too many classrooms the subject is still presented in a manner which is unlikely to appeal to a good many children. Considering ways of making it appeal, of inspiring the dull and motivating the unmotivated must surely be the prime tasks of a teacher.

At a time when there is an air of depression surrounding mathematics teaching and working in schools, we ought to be standing on platforms attempting to inspire the generations following us to take up the challenge of working in schools with children, all children. To be sure there is room for much improvement in school, improvements that

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Talkback

A routine game?

John Bald

In 1977, The Whitehead Report on children's private reading showed that, by the age of 14, some 70 per cent of pupils in mainstream schools were either not reading books at all, or were at most reading only one or two books per month.

Two years later the HMI survey, *Aspects of Secondary Education*, found that reading in secondary schools was often a fragmented activity, entirely subject to the requirements of other work. Only in 10 per cent of schools did they find wholly satisfied provision for reading.

These reports indicate that too many teenagers are having no experience of sustained reading. It is rarely to be found on school timetables, and is often not fostered at home. In school we have a decisive influence on the activities of children during their working week. We have no right to criticize television for destroying the habit of reading if we are not using school time to promote it.

One way of doing this would be to ensure that each child in the secondary school spent at least one hour each week reading. The books could come from a school, class or public library, from a school bookshop, from the English department's stock or from home. They need not be expensive.

sive. The time involved would probably be less than 5 per cent of a child's working week.

This kind of reading involves a period of sustained and patient concentration. It allows children to get into a book in a way which is not possible if they are rushed, or under pressure to use their reading immediately for some other purpose. The mind is not cramped.

For the most able children the reading period provides a possible starting point for the development of their interests beyond the normal curriculum. For those who have difficulty with reading, it provides a valuable opportunity for unhurried practice with an accessible book.

The reading period is not a "free



period", but is seen by children as an important part of their work. It is enjoyable. Where private reading periods have been introduced with enthusiasm and keen interest, the pupils have responded with enthusiasm and keen interest.

They appreciate the peace and quiet which reading brings, the notion that they are intelligent people who have interests of their own can be allowed to develop. The teacher provides expert guidance, the choice of books and the atmosphere in which reading is encouraged. During the reading period the teacher reads too.

In Canada, a number of schools now begin their day with — Uninterrupted Sustained Reading — and every person in the school joins in. This makes a remarkably calm and purposeful start to the working day. Its introduction would be a bold step for a head teacher to take.

It could be easier to introduce a quiet reading on a more gradual basis perhaps in tutorial periods, substitute general studies lessons, or as part of the English timetable, and then consider extending the provision to a trial period.

Experience so far suggests in addition to the curriculum can be a very great benefit to almost all pupils, perhaps most of all to the 40 per cent who do not read books at all.

John Bald works at the Language Centre, Colchester, Essex.

A time to read

W.S. Dellar

Overheard at the start of an English lesson with my fifth year, the remark, I thought, was unfair.

"I think he'll make us do a comprehension again."

"Yes, I expect so..." We hadn't done many at all; I rather prided myself on staying off the treadmill of past papers. The irritating thing was that I had prepared one for that lesson. After all, it was a wet Thursday afternoon and they were taking the exam in the summer, so I launched off regardless.

But as they got down to writing, I got down to pondering the implications behind that remark. Sadly, none of them fitted in at all with what I thought I was doing in English lessons.

To the speakers, "comprehension" was obviously seen as a sort of institutional, routine game which you "did" whereas I thought I was concerned with producing good, sensitive readers. In this game they were passive and I, the teacher, had the initiative ("he'll

make us"). What I really wanted was for them to become independent readers, committed to the idea of reading for their own pleasure and fulfilment.

Moreover, behind that word "again" lurked a whole phalanx of possible assumptions. Did it mean that they accepted the image, also tacitly assumed by some teachers (and publishers), of "comprehension" as a ladder of progress from first year "Art of English" — filling in blanks and lots of discussion — up through innumerable course book exercises, to the broad plateau of O level past papers?

Did they, I wondered, think they were getting better at it, after all this exercise, or even that the passage were magically "graded" in some way from year to year? Or did the "again" refer to a perception of "comprehension" as an isolated, endlessly repeated classroom activity cut off from any genuine reading they might do outside?

Even the phrase "do a comprehension" worried me. Why didn't it make sense if I substituted the word "understanding" for "comprehension"? Could it be that "comprehension" was seen by them (and is?) a fixed, stereotyped activity with a passage of prose, usually not intrinsically interesting or significant, read for the sake of the questions which follow, which

being done, the whole thing hangs except for the mark it earns!

There are about a million children in this country whose parents have been divorced. Most of them are at school, and teachers need to consider their own attitudes towards divorce. Many will themselves have first hand experience of it, and that may help them in their understanding. School can help by providing stability, a warm, caring environment and opportunities for achievement.

Success at school may go some way towards compensating for feeling a failure at home. The common pitfall of the classroom is the bland assumption that all children have two parents in one happy home, and that those who have not must be abnormal: "Write an essay about My Home, Our Family; draw your family tree."

The suffering caused to the children depends on how the parents manage their separation and divorce. Sometimes there is a minimum of bitterness and resentment and self-righteousness, and a high degree of consideration for the children's feelings. Sometimes there is great bitterness, rivalry and greed, and the children are made by one holier-than-thou parent to be objects for manipulating and hurting the other parent, who may be equally self-indulgent.

If there has been intolerable tension in the home, separation and divorce may come as a blessed relief for all concerned. Many children may need peace and privacy, especially at school, and not adults poking and prying and rushing in too eagerly to try to help them.

What is important is not what the teacher says to the child but what the child feels able to say to the teacher. What matters then is that the teacher listens, and what the quality of the listening is. Pupils need to feel that they can talk to their teachers without fear of betrayal or censure. For those children who do need, and want, help, it should be forthcoming.

Some children's disruptive behaviour at school is a cry for help. The sensitive, listening teacher may enable children to feel better about what they think is happening between their parents. Guidance and counselling may even change the outcome! Take the case of a boy I was asked to see in my work in a secondary school.

Paul had been behaving disruptively at school. I was told that he had been the apple of his father's eye till his father had left home two years previously. He and his mother had never heard from his father since, and did not know where he was. He had run up debts, and felt that his family would be better off without him.

Paul was not keen to discuss any of this, so I discussed with him how he felt about school. He told me that technical drawing was his favourite subject, and when I invited him to tell me about it and provided paper and pencil, to my astonishment he drew "a box with a piece cut out of it". I was easy for him to discuss his father's disappearance with me. He remembered that his father had once worked at a place on the South Coast. "Might he be there?" I asked.

A couple of weeks later Paul came to see me saying, "I've found him!" He had set out on a

Home, school and divorce

by Patricia Goldacre

A recently appointed headmaster was sacked by the school's governors when they found out that he had been divorced. I wonder what the children of divorced or separated parents attending the school thought about that? True, it was a Catholic school; but there are almost as many Catholic parents as others separated (if not divorced). Break-up of the marriage is the important thing as far as children are concerned, not the legal act of divorce.

Many teachers know that children can be helped with their feelings and that, even if they are caught up in the separation and divorce of their parents, it is not what happens to them, but the sense they make of it, that counts. Teachers can and often do make a vital contribution to a child's understanding of marital breakdown, separation, divorce and relationships within the home.

Very young children experience divorce like the death of the absent parent, especially if there is no frequent access to that parent. Surveys show that about a third of the children whose parents are divorced lose all contact with the father when the mother has custody. This may not be lack of interest on the part of the father, but refusal to allow and encourage access on the part of the mother. Separation and divorce may leave children of any age feeling depressed, worthless and under achieving for years. Older children may feel keenly the stigma of coming from a broken home, especially when they are in a school where stigma seems to be attached to divorce.

There are about a million children in this country whose parents have been divorced. Most of them are at school, and teachers need to consider their own attitudes towards divorce. Many will themselves have first hand experience of it, and that may help them in their understanding. School can help by providing stability, a warm, caring environment and opportunities for achievement.

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A couple of weeks later Paul came to see me saying, "I've found him!" He had set out on a

exchange of views on curriculum development. She says that a major part of the association's work is to help schools identify their most talented pupils and provide them with suitable encouragement. In the same way that they make special provision for those with learning problems at the other end of the intellectual scale.

Several local authorities, where special teaching and in-service training for the gifted now exist, have particularly close links with the association through members.

Sir George Porter, the Director of the Royal Institution, who is the association's president, says: "When the association began its work, giftedness was identified more with music and the arts than with other fields. It has been increasingly recognized that the problems of the child who is gifted in mathematics or science are at least as important and, in some ways, more difficult, because these are subjects of the school curriculum."

"While it has always been accepted that a really gifted musician must have special attention outside school, there are still some who hold that, on egalitarian grounds, similar opportunities should not be afforded in mathematics and science. This strange logic is, I am glad to say, becoming less common."

The National Association for Gifted Children is at 1, South Audley Street, London W1Y 3DQ (01-499 1188).

Something special?

Gillian Thomas on the National Association for Gifted Children

Would they be incredibly intelligent, self-assured and superior; I had wondered before meeting the 20 eight to twelve year olds who spent a week studying ecology at the Orielon, Field Study Centre in South Wales, on a course organised by the National Association for Gifted Children? It had been quite a relief to find that they had not, as I had assumed, all passed a rigorous intelligence test. They were bright, but only a few revealed themselves as exceptionally so by astute observations or skilful work.

Since it became a national charity 12 years ago, the association's aim has been to enable children who sail through life with the greatest of ease, but for those who don't, despite having exceptional talent, explains John Denham, the association's director. "When such children are not stretched to their full potential, it is a personal tragedy — and a loss to society. Moreover, they may well turn their abilities to distinctly anti-social ends: for example, the criminal fraternity undoubtedly includes some of the country's finest brains!"

Several of the children at Orielon had been referred to the association by an educational psychologist — and at least two had severe emotional problems.

Children can also attend Saturday clubs at some of the 49 local branches run voluntarily by members. The activities include craft workshops, chess, electronics, sports, maths and science, chess, electronics, sports, music groups, and visits to local museums or factories.

Frederic Palinter is encouraged by the increase in corporate membership. One of her priorities is to link such members together, to build a body of practical expertise, and to encourage the

The association is particularly concerned at present to establish more branches in inner-city areas, where they feel the need is often greatest because of restricted opportunities at home. The clubs also provide an opportunity for parents to share expertise and experience with other parents from the same area.

In schools, John Denham cautiously describes the association's role as that of a catalyst. "In the sixties, concern for the gifted was very unfashionable. The fact that they are now accepted as part of the overall educational pattern is due to the greater awareness of their needs," he says.

The association is also increasingly involved in educational conferences. It recently worked with the DES on two residential courses for gifted children, and is organising a series of interdisciplinary day-seminars for the DHSS on the pre-schooler.

The recent appointment of a full-time education officer, Freda Palinter, a founder-member of the association, means that contact with the DES, LEAs and individual schools will be further strengthened. A former FE lecturer in economics, she has been involved for the last two years in conjunction with the DES in the association's research on the gifted.

Frederic Palinter is encouraged by the increase in corporate membership. One of her priorities is to link such members together, to build a body of practical expertise, and to encourage the

exchange of views on curriculum development. She says that a major part of the association's work is to help schools identify their most talented pupils and provide them with suitable encouragement. In the same way that they make special provision for those with learning problems at the other end of the intellectual scale.

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Gerry Williams

'Many children may need peace and privacy, especially at school, and not adults poking and prying and rushing in too eagerly to try to help them'

Saturday morning, taken a bus to the South Coast town, and found his dad. As a result of this, the father felt that he was needed and wanted and returned home. And Paul began to behave better at school.

Many children can cope adequately with their parents' unhappiness, disharmony and divorce. It may be because of the children's own intelligence and adaptability. It may be because of kindly support at home, or from grandparents, relatives and friends. This same kindly support should, if wanted, be what a school can offer too.

I don't underestimate the difficulties many teachers would have in discussing family situations with pupils. Specialist teachers and teacher/counsellors should be trained, experienced, and feel that they have the co-operation and support of specialist helping services.

However, there is a growing body of opinion that the understanding of interpersonal relationships is an important part of every teacher's professional skills. When the difficulties are severe,

and if the parents agree, it may be most helpful to refer the child and family to the specialised help of the local child guidance clinic, or the school psychological services.

Yet some parents seek to keep their troubles from their children's schools and other agencies at all costs, for fear that their children would be thought the less of it if it were known that they came from a "broken home". It is not long since it was a universally shameful and stigmatising thing, and no doubt still is in the minds of some people, not least those who are themselves unhappy at home.

So it seems important that schools should endeavour to be as free as possible from prejudice, stereotyping and stigmatisation. Would it not be better if, instead of referring to "broken homes", we referred to "two household families"?

Patricia Goldacre has worked with maladjusted children for a number of years.



Top: Reg Bolton: 'We don't intend to shock the children.'

Above: Two outreach players show how not to push a wheelchair.

Sheila Mackay reports on one theatre company's attempts to help children think twice about what it means to be handicapped

'All right, you can take off your disability now'

Shortly after 9 am the director of Theatre Clwyd Outreach arrives at Queensberry Primary School in North Wales.

He extracts one of his main props from the back of the van and manoeuvres it niftily up steps, through doors and corridors, to the main hall, where the headmaster waits with 14 excited children. Introductions over, the group moves to the empty staff room where Reg Bolton sits on the prop. From the wheelchair he tells the children why the Outreach Company has come to visit the school.

"It's International Year of Disabled People. What do you know about this YYDP, as we call it?"

"It's been on *Blue Peter*. They're raising money for disabled people..." someone ventures.

"Raising money? That's part of it, but not the only aspect. The United Nations asked which group has been unfairly treated by society and chose the disabled to focus on in 1981. They wanted to do something different in addition to raising money and promoting hospital research. Then someone had a great idea and said that the public have some strange ideas about handicapped people, so this year let's try to change their attitudes."

Reg Bolton spent a year of his life partially paralysed; his younger sister is affected by Thalidomide. His belief in a positive, optimistic approach to any problem connected with disability underlies Outreach's contribution to YYDP. *True Stories* is a hard hitting and thoroughly enjoyable theatrical production, linked to direct discussions with Clwyd schoolchildren, and specially prepared packs for follow-up work in the classroom.

"Although we portray handicapped people in normal life with all its comedy and tragedy," he says, "we don't intend to shock the children, or make them feel guilty, or even to amaze them with the superman feats of disabled heroes. Our first aim is to interest them in the problems associated with disability. The theme running through the production is 'Everyone is handicapped, in his own way'."

The discussion is going well with the 14 children voted by their classmates for the privilege of taking part in the preparation group. Half of them will spend the rest of the day "handicapped" in some way, either without the use of sight, hearing, mobility or the use of their hands. The group divides into "handicapped" and helpers.

"Remember that this isn't a game but an experiment, to let you feel as closely as possible what it is to be handicapped," says Reg Bolton, as he hands over the wheelchair to the boy who has chosen it. Two others are blindfolded, one puts on ear muffs, two little girls select huge mittens, simulating arthritic hands.

"Helpers don't let your partner get scared or hurt, but don't treat him or her like a baby. They must do as much as they can. And tell each other how you feel, don't just keep it to yourself. The break bell rings and the strange little group moves off. "If anyone feels claustrophobic or uncomfortable take off the handicap, because that's another handicap."

Meanwhile, the Outreach Company has

arrived, and set up for a performance. *True Stories* in the main hall. At 10.30 Reg Bolton takes a seat along with 200 children and their teachers. "I really love this show," he confides. "I enjoy it more every time I see it." A knockabout clown scene with slapstick and banter between actors and audience is in progress. Then, to appropriate music, the "Time-machine" appears.

It's a prop like a gigantic door, through which attitudes of past ages towards disability can be magically surveyed: cruelty and survival of the fittest; the persecution of so-called witches in medieval times; the cruelty of presenting disabled people as freaks in Victorian fairgrounds. Clearly the action moves to the present, when the question is posed: "Have we got the attitudes to handicapped people today?"

The second section of *True Stories* is concerned with just that. It was written and devised after Clwyd Social Services had put each member of the company in touch with people suffering from a disability. Like the children in the preparation group, each actor selected a disability, and included in performance real life experiences and reactions of the people they spent time with.

John Butterley, spent most of the three week rehearsal period in a wheelchair; Patricia Hilton, already a little short-sighted, studied blindness; Cadfan Roberts' choice of deafness came out of his interest in communicating with the deaf; and Kevin Lark helped by a newly formed *Arthritis Association* in Flint, learned, among other things, how to use aids, including the "knock-off," which provoked a bit of hilarity in the group.

But the person to whom his "true story" performance owes most is Win Standish, a mother of three from Flint, who suffers from severe arthritis, and who helped him to understand it. He presents her walking bravely with every painful step. At every step she is attacked by pain all over her body, which on stage is dramatically represented by Cadfan and John. Wearing wing masks like robbers, they punch her back, arms, shoulders, as she moves and along on her steel walking frame.

"Arthritis," she tells the audience, "is having someone hanging on to you, coming you pain, all the time." But she smiles at while considering what to give the children for tea. "Beans? Sausages? Eggs?" The legs suddenly give way, the walking frame tumbles over, and she's down.

The other actors drop their gaffer and rush over, assuming false alarm: "Are you all right, Kevin?"

"Yes, thanks. But then I don't have arthritis," he says, bouncing up, dusting himself down, and walking off stage.

The children's reaction leaves no doubt about the impact of *True Stories*. That night, Outreach's stage manager, says: "We've done a lot of work with drama in schools. The maximum time limit for holding attention at upper junior school level is generally accepted as 40 minutes. This show held them for more like 80." The performance engages the children, at an emotional level, it's exciting and alive while introducing aspects of disability they had never

thought about. It emphasizes the fact that the handicapped person is always engaged in a struggle of opposing forces, pain and its absence, darkness and light, silence and the need to communicate. Life for the disabled person is a continual drama and, like the actors on stage, they are singled out for special attention which is more often than not inappropriate.

"People usually react to the handicapped either by embarrassment or denial," says Reg Bolton. "We want the children to understand that behind the handicap there is a normal person with needs like everyone else."

After the performance, the "disabled" children from the preparation group gather round Reg Bolton with their helpers. "All right, you can take off your disability now. How did you find it?" They look relieved as they hand over their props with a chorus of response.

"Scary," says a blind boy. "I couldn't eat my school dinner," says another. "She had to feed me like a baby. It was awful."

"It makes you wonder about the whole way blind people have to manage with sticks and dogs..."

"...and how they pour a cup of tea."

"It was embarrassing when David had to help me to go to the toilet!"

"I never thought handicapped people got embarrassed before. I thought it was only other people..."

The actors have been striking the set. Reg Bolton collects the wheelchair and the group moves off, followed by autograph hunters and enthusiastic hand-waving. Patricia Hilton explains: "I always say 'no' to autographs. You can't give to one and not to all the others."

There's another school to visit tomorrow. In fact, there's a waiting list of schools throughout the region who have asked Outreach to visit with *True Stories*. By the end of the run they will have chalked up 50 performances, and left hundreds of youngsters ready to think twice about what it means to be handicapped.

When Bill and Wendy Harpe set out to open an arts centre at the old Great George's church in Liverpool, they came into head-on collision with the local children, who saw the disused building as their playground, and were busy wreaking havoc.

Harpe suggested they should use it together to create a place everyone could enjoy. It took two years to reach an absolute truce.

Today, twelve years later, the project has grown into a unique base, where all kinds of activities occur, all sorts of skills are learned, and lasting friendships are forged. The Harpes are amused, and gratified, to find that many of those hostile children from the early days are now regular visitors - along with younger siblings or, in some cases, offspring.

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The Blackie has existed on money from arts and education grants, as well as a generous annual donation from Liverpool patron, Peter Moores. Bill Harpe describes the identifiable "streams" to the project: "There is the fine arts, the practical arts, sport, social involvement, education, youth work, community development. We promise that our programme would release energies restricted or buried by divisions of sex, class, education, work, money, culture and language."

The Blackie is attended by all kinds of people and its doors are open seven days a week (except for three days off at Christmas). There is a concentration of children using it in their spare time, and of the unemployed; many regard it as a full-time, spare-time "home". The Harpes organize individual tuition in subjects such as maths, English, and History, and pay for courses for people when they consider it worthwhile.

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Liverpool theatre. Two girls, who have been going daily for a year, rehearsing dance and putting on shows, are now having professional lessons paid for. They are not expected to pay back the money, even if they get work. The philosophy at the Blackie is that people repay by bringing their skills to the centre, and teaching others.

Bill Harpe says: "If we had space the group of artists and helpers would be larger, but we do ask them to return and teach their skills, or to come and play at an event. If we lend money to someone from the neighbourhood we don't charge interest, except human interest and involvement in the work we are doing."

There are sporadic visits from outside entertainers, and frequent film shows. Groups of Blackie "clients" are taken on outings to concerts, theatres and shows. There are also "games" staged for the public with the aim of making people question what they are getting from life.

One game was commissioned for the centenary of the Education Act. Entrants were asked to draw a physical balancing game to determine a hierarchy. Those who came out best were at the top of the "society", with the worst at the bottom.

The latter were given jobs as workers in a straw mine and, with their feet tied together, spent the day picking up straws. The next edition were the delivery people, who collected straws and delivered them to people who made them into letters ready for the elite top grade to create words such as "freedom", "democracy", and "equality".

They were then used as the basis for talks to the miners on the way our society functions.

Few people missed the irony of it, Wendy recalls, and the game provoked a good deal of anger, discussion and upset. One man became so angry at "this being done to people" that he got into a fight, and ended up with a black eye.

The Blackie is well respected in the neighbourhood, even by those who do not attend. A nucleus of artists continue to work there, but this year their Arts Council grant has been stopped, and they are trying to work out new ways to raise money in order to survive.

Wendy Harpe is angry that lack of money might end it all. "One of our problems in getting money has always been the idea people have that we are self-indulgent. In other words, because the Blackie is fun, because it isn't forcing people to learn and produce in the way, say, most schooling does, it can't be valuable."

"I've seen so many people coming here whose lives are lacking in opportunity, stimulus or money to do anything much. The Blackie offers those things, it gives people the chance to dabble in ideas, to build up creativity, to find things they can enjoy doing and be good at, things which enrich their lives."

"We may not have a high-minded philosophy spelt out, but you only have to come in here to see what a lot of people are learning, and what a lot they are getting from making close, lasting, caring relationships. "I regard it as an education for life, and that is what we badly need with the kind of future we've got."



Children from St Winefred's School, Holywell undergo the experience of being handicapped for a day.

'We promised that our programme would release energies restricted or buried by divisions of sex, class, education, work, money, culture, and language.'

Angela Neustatter visits the Blackie arts project in Liverpool

Building up creativity

When Bill and Wendy Harpe set out to open an arts centre at the old Great George's church in Liverpool, they came into head-on collision with the local children, who saw the disused building as their playground, and were busy wreaking havoc.

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The Royal Ballet is 50 years old this week. Peter Brinson looks back over the development of its educational activities

Slowly but surely broadcasting is acquiring academic respectability: two collections of critical essays have just appeared which will give the process hefty shove. *British Television Drama* edited by George W. Brandt and *British Radio Drama* edited by John Dreakins (CUP £19.50 and £6.95 each).

The television collection offers the kind of fare which will make ideal background reading for the symposium which are now springing up all over the place. Trevor Griffiths, David Mercer, Dennis Potter and Peter Watkins are among the writers assessed; the essayists speak from a variety of stances, but in each case with considerable expertise.



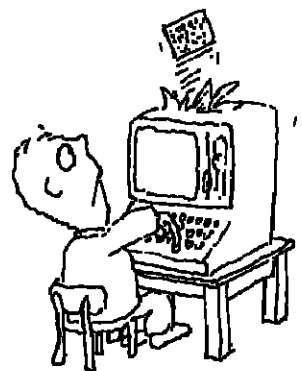
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resources

My microcomputer is a menace!

A. K. Hennessy on how microcomputers fail teachers and teachers fail microcomputers



Microcomputers cause a lot of headaches and extra work for teachers. Some are due to the rapid development of technology, others are caused by inexperience on the part of teachers and other education officers, some can be traced to faulty design, and others are management problems. And, of course, some faults can be found with the middlemen—the dealers.

When I took delivery of my microcomputer in April 1978, it had to be turned on for at least ten minutes to warm up; this made it difficult to do much with 40-minute classes, as it also had to be carried to different classes. Fixing this fault cost me £5 at the local dealer's. My disk unit, bought in the summer of 1979, took 10-15 minutes to warm up before it could read the directory properly. I had to carry the unit back to the dealer to have a faulty part replaced.

I bought some games tapes recently and could not get my microcomputer to load them because the newer tape units are aligned differently. The tapes were taken back and put on floppy disk for me, but what if I had not had a disk unit?

About two years ago an electronics engineer and I spent three months developing a keyboard unit with interface, and programming my microcomputer to handle the keyboard unit's output; now it doesn't work because I have had a new ROM put in my microcomputer, and all the memory locations are different. Another fault that occurred intermittently turned out to be caused by the expansion plug I was using which had set up a "flicker" on a frequency that caused the microcomputer to lose the cursor.

The biggest problem with my microcomputer is the lack of a proper disk operating system that provides a direct-access facility. This has now been solved, and all new versions include this at a lower price than I paid for my disk unit—although the manufacturers have ever so magnanimously (or ingenuitously) offered to "retrofit" my equipment for £76. There is no excuse for a major manufacturer to put a disk unit on the market without the software for direct access; otherwise it can only be used as a fast tape device.

There are problems with other systems as well: one disk operating system causes the incoming data to overwrite the program in memory. Another delightful feature of my microcomputer's disk system is that a comma, semicolon or colon in the data is confused with control messages and corrupts memory as it is being loaded.

Delivery times used to be a headache, and obsolescence can mean that your equipment is out of date before it is delivered. After having waited over a year for a printer with graphics, and having paid a deposit on order, I received one of the first printers. But the printer is a friction model which became obsolete two months later; and its graphics features

are worthless because it leaves a 1-inch gap between each line. Having spent £900 to expand the memory of my microcomputer from 8K to 32K, I now find that I can't have additional features fitted because the circuit components are incompatible and the only space for fitting them is already taken up with the memory expansion unit. Now, less than three years after an expenditure of about £3000, my microcomputer is worth about £800, including disk unit, printer and 32K memory—because they are all obsolete!

My tales of woe are shared by many teachers in the Manchester area whose schools I have visited over the past three years. Several printers have burned out because pens have dropped into the printing mechanism while they were running. Other printers are unsafe because the plastic pot can be lifted off and fingers and hair can easily reach moving parts, yet the temptation to lift off the top is irresistible because the top obscures the printed line.

One school using an earlier version of a disk unit of the same manufacture as that of another school is not able to "swap" programs because the older version of disk unit is incompatible with the newer version. Each manufacturer has its own disk recording methods, so that it is not possible to take a program from one system and load it onto another one. Is it not about time that microcomputer manufacturers started to conform to standards of performance and file layouts, or at least provide the facilities for conversion?

Because of this lack of industry standards connecting microcomputers to other devices can be very tricky. One school bought an interface unit in order to use the school's teletype terminal as a printer—mainly because the manufacturers were 16 months late in delivering their advertised printer. Not all the characters coming from the microcomputer survived the journey through the interface, so that print control characters such as, and;



did not produce the right tabulations. This was devastating for several classes of children who, with very limited time on the microcomputer, were required to produce printed output for assessment.

The dealer's attitude was that if the school wanted a better interface device, they'd have to pay a lot more for it—but the limitations of the original interface unit were not made clear when the school purchased it, and it is in fact doubtful whether the dealer's staff even knew about the problems at the time the first unit was sold.

Some connections provided by

dealers work in such a way that only one peripheral can be connected at one time, which can be maddening when using a disk unit and a printer; it can also cause the circuit boards and connectors to break from over-frequent and/or over-enthusiastic plugging and unplugging of the connectors. On one microcomputer, an £8 component inside the microcomputer can be damaged simply by inserting a connector upside down.

The data preparation problems seem to have got worse since the advent of the micro into schools computing. Many teachers just do not grasp the implications of the fact that most children can key in only 5 to 30 characters per minute. By counting up the number of characters that have to be keyed in on average for each piece of assigned work, multiplying this by the number of pieces of work and then multiplying this figure by the number of pupils who have been given the assignments, the teacher can determine the total number of characters that need to be keyed in.

Divide this figure by average keying speed of 15 characters per minute, and the result is the number of hours needed to key in all pupils' work. In many schools, this figure exceeds 24 hours a day during the time of year when the children are most likely to be ready to key in their work.

Obviously, the most aggressive and able children are going to get their work done, as are the children who can type; the rest will not. Should children be put in this difficult position especially if the work is going to be assessed? One solution is for the teacher to do the keying in, but unless he or she is a trained typist or has a knack for the keyboard, it will not be much faster than with pupils' keying.

Some teachers do not understand enough about computers to get them to work properly. They waste enormous amounts of time with trivial problems. Is it acceptable to take a group of children for an O-level or CSE examination course when the teacher knows so little about the subject? This is a question for heads and education officers, who distribute the funds for teacher training.

It takes a minimum of a full-time academic year to produce a trainee programmer. He or she would still not be competent to teach the subject and would know nothing about systems analysis, data processing, the social implications of the use of computers, or computer applications and logic gates—all of which are on the CSE and O-level syllabi.

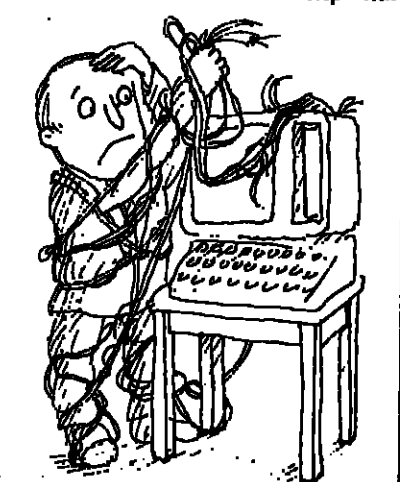
Another problem associated with that of the inexperienced teacher is the teacher who can program. Either he is an ex-programmer, or he is an ex-teacher who is now a full-time trainee programmer and no longer teaches, or he is a part-time teacher who has another part-time job as a programmer.

To request teachers with a full timetable to do any programming is to ask them to do continuous, all-normal lesson planning, materials preparation, marking and pupil progress activities. They will not have time to write programs and teach, and least able programmers often have no idea what they are letting themselves in for.

A University of Manchester Institute of Science and Technology project this year produced four programs for classroom use, based on a 3-minute transaction for each pupil; this took out third-year B.Sc. Computation Honours students over 300 man-hours for each program to research, specify, design, code, test and implement robust programs. In short, it appears that it takes about 100 man-hours per transaction-minute to make a proper job of programming. This ties in with

James Martin's "rule-of-thumb" of two tested working program instructions per working hour for a trained programmer. What it means is that any programming is a lot of work and is very time-consuming if the product is to be usable.

The acquisition of package programs for microcomputers can only be described as a "lucky dip" at the moment. Some programs distributed free of charge among schools are really good, solid, reliable, usable software; others that cost over £100 are extremely difficult to use with little documentation and no help with



errors—and they fall apart when you breathe on them. Very few dealers are able to provide full support for the programs they sell; it is usually up to the user to try to work out how the program works.

Dealers also are loath to part with program tapes or disks without getting payment first, and no one provides an "on approval" service because of the possibility of copyright violation. Teachers cannot take the time to test and evaluate a program costing say £5 or £10 before buying it. For the more expensive software, even technically competent programmers have difficulty in assessing quality. What is needed is industry standards for the production of software for education, and specialists to vet the material that is made available for sale. One manufacturer attempts to do this, but many of the programs sold under its name are not of an acceptable standard.

In summary, the main problems that face microcomputer users in education are: rapid change in technology whereby purchasers are left stranded when new developments make their equipment obsolete; inadequate utility software from manufacturers; unsatisfactory testing and design by manufacturers; and formats for peripherals, codes and formats for peripherals.

Decision-making about computers and computer studies by heads and education officials without adequate knowledge or understanding of the nature of the problems involved; teachers who take up the use of computers and the teaching of computer studies without the minimum necessary training; and dealers with no long-term commitment and little competence to handle technical problems.

And yet, microcomputers are here to stay. They are already an important part of our commercial and industrial life, and they soon will be vital in the running of schools. We all have something to gain by cooperating to make the most of the opportunities they offer; but it must be done with an equitable distribution of money and effort in a realistic way.

What is more important, however, is the stated concepts are likely to be grasped through the experience of prescribed activities. I think the answer will depend on how active the school is prepared to be, for however complex and constructed, this software is by no means teacher-proof. It is contrary to the demands of a commitment from the teacher. What is more, it offers excellent value to those who know what they are getting themselves in for.

Primary programme

Philip Hytch on a primary science pack.

Look! Primary Science. Pack A and Teacher Guide A By Cyril Gilbert and Peter Matthews Addison-Wesley, Pack A £14, Teachers' Guide £2.95

Cyril Gilbert and Peter Matthews, respectively Inspector and Adviser in schools in Nottinghamshire and Northumberland, so they should know what they are talking about. From a casual inspection it would appear that they have succeeded in producing something which could be of value to primary teachers who are trying to create to respond to a bewildering array of curriculum pressures, and which is the primary science today.

The scheme consists essentially of Teachers' Guide and a matching set of seventy-one work cards for each of two age ranges 7 to 9 and 9 to 11. On the first (Set A), is currently available. The overall aim is ambitious, namely "to help teachers in primary schools to organise and put into practice an effective science programme". The scheme is grouped into topics such as: Ourselves, Animals and Plants, Air, Water, Changing Things, Earth in Space, Light, Magnets and Electricity, and Forces and Movement. Each topic provides activities serving a general concept which, according to the authors, reflect those developed by the Assessment of Performance Unit. It is to be hoped that this claim is not one that will be taken up by authors in general — one reads the implications that national assessment schemes should determine what is taught.

The Teachers' Guide is comprehensive and impressive, including a thoughtful discussion on the nature of science, an excellent chapter on the ways the materials could be deployed, and an especially helpful section on storage and retrieval. In this chapter the authors make the interesting suggestion that "Group sizes of two and three are ideal". They may well be right, but it is nevertheless useful in the context of science devoted to the encouragement of the scientific method that no empirical evidence is presented to support the assertion.

A further chapter demonstrates convincingly how the scheme may be linked with what the NFER "New Hundred Primary School" Teachers' survey found to be the thirty most popular topics. The list of topics comes to 130 items, but would be easy to obtain and relatively inexpensive.

The final and most important chapter deals with the science background notes for each of the 71 cards and includes the necessary advice for extension work for each concept, and safety points are not neglected.

The Teachers' Guide is both convincing and confidence building; that one approached the pupils with high expectations.

There are some problems, however, which are addressed by the authors. For example where children are asked to do a small or a worm move in one minute — and this quite apart from the search to find the creature in the first place. Instructions such as "Ask your teacher for some warm water" and "Work in a dark part of the room" are not always called for. The "imagination" response. Some of the experiments are very fiddling, and I suspect too difficult for children of this age to cope with satisfactorily.

Media ghetto?

Victoria Newmark reports on "Broadcasting and Youth"

Broadcasting and Youth: a seminar to review recent developments. BAF, April 23 "Young People and Broadcasting". A feasibility study for a Young Adult Unit proposed in "Broadcasting and Youth", carried out by Peter Mandelstam £1.50 Calouste Gulbenkian Foundation (plus p&p)

"We believe that the 14-21 age group has needs quite distinct from the adult population, and that broadcasting has an obligation to fulfil them." "Broadcasting and Youth", 1977 Report.

Why should young people "need" broadcasting? Peter Brinson of the Gulbenkian Foundation offered one answer at a recent seminar. With apparent relief, he hailed Marilyn Peiman of Capital Radio's *Jobline*, after a string of producers dedicated to "reflecting" and providing entertainment as representing "what it's all about, which is jobs". Although later he retracted this, the change of heart was unconvincing.

The unemployment figures cast their own light on the 1977 Report's claim. In July 1975, when the Report was hardly even a twinkle in anyone's eye there were 232,840 unemployed under 20 years old. By July 1977 there were 455,596. In January 1981 the total had apparently held steady at 425,042, a deceptive figure taking no account of young people temporarily employed on government training schemes. The semi-voluntary community service scheme recently mooted by David Steel and others costs 700,000 — a total which may be made up all too quickly by this year's school leavers.

Jobs featured in the clips played by three out of the four producers whose "experience-sharing" took up the whole morning. Only Mike Bolland, of *Something Else* (BBC TV Community Unit) seemed to think that teenagers' special interests might extend beyond the dole queue. The emptiness of these "worthy" programmes (so-called in the trade), all owing some part of their funding to the Manpower Services Commission, was pointed up when Marilyn Peiman let her figures percolate through her breakfast-bright commercial style. In 1980 *Jobline* had 30 applicants a day for 1800 jobs in the Job Bank; in 1981, 100 daily applicants for 400 jobs. The total placed was unchanged at around 30 a week, or a similar figure to any Job Centre. It seemed that the producers did after all need to be reminded by the Sevenoaks Media Club, whose tape-side show opened the day, of what was going on "at a grassroots level".

"We've heard enough about jobs", said one girl, "it's depressing." "If you're unemployed the last thing you want to talk about is being unemployed," said Mike Bolland (BBC Community Unit). The follow-up to these programmes is nevertheless huge. *Just the Job* (Westward) made contact with 10,000 viewers, while the BBC's *Roadshow* distributed a million leaflets. Young people want jobs all right. What if the jobs aren't there, though? Can this be the reason the BBC has suddenly backed out of the 1977 Report? Though a pilot Unit is operating on Merseyside the idea was the day's dead duck, and the only person to mention it in an afternoon of personal discussion was the chairperson.

In a startling outburst, Naomi McIntosh, who is Senior Commissioning Editor for Channel 4, spoke instead of her personal involvement with "young people with the whole of their life on 'six pints of milk and a couple of packets of tea-bags' a day, and constant channel-hopping on the telly. Back to a whole life-support system, can be cost-effective for any government agency. To do them justice, most producers were right offering a substitute for living. With the exception of the *Something Else* team who were offering any great degree of control, then teenage viewers normally have — that is, none at

all. The adults perceived them as "threatening" (Tony Matthews of BBC's Continuing Education's *Roadshow* and *16 UP*) "inexperienced", "not knowing their own mind" and even, generously, "with a lot to offer". There were six young people in the audience, and they were trying to get jobs in tv.

As Mike Reinhold of South Western said, "They're not Maritians, you know". Young people, themselves, whenever they could get a word in, were making comments such as "We're not separate from society" while the BBC producers, almost to a man, were saying "It's just a question of finding the right format". As Robin McCron (Leicester Centre for Mass Communications Research) observed, there are some remarkable omissions from young people's programmes.

Despite the relentless focus on jobs, the wider aspects of unemployment, of most subjects, were chirpy glossed over. *Check It Out* (Tyne Tees) suggested "If you're out of work, it's not your fault. You see, there won't be many more jobs until the economy produces more". Never a whisper of the different social classes in which young people are growing up, never a hint that all do not share the same interests.

Perhaps, as Rosemary Lee (BBC Education Officer) pointed out in a discerning speech, young people, or any groups with special interest, would benefit more from being recognised as part of the general public than from being hived off to their own programmes where they can be specially patronised. Young people surely are "ghettoised" (the conference's favourite word) in the domain of pop music, all other interests served by low-budget, low-profile programmes in the mission style. How many young people's opinions are canvassed in that shows, on the street? It is surprising, concluded Ms Lee, that they should think no one cares when hardly anyone of importance does care? The only controller present at the seminar was Paul Bonner of Channel 4.

One way to involve young people in the media is by access participation. Access was strongly plugged by Mike Bolland. His excellent Belfast report for *Something Else* proved the point that young people and broadcasters could collaborate in successful and representative tv, but he was in general howled down. We don't expect to have to have women to make shows about applicants for 400 jobs. This aroused no comment.

Though Malcolm Southern of London Weekend TV said he saw no reason not to have a programme staffed by young people as *Skin* had been by black people, and, though one of the young people present managed to shout out that the union had offered support, the broadcasters held fast to their expertise and some of them afterwards wondered why we should, after all, worry over these tiresome young people.

Those who wished for some more positive indication for the future than a consensus that a "terribly good, terribly well-written" soap opera was next on the cards, and even then the plea made by Andrea Winton of Tyne Tees for a national current affairs programme aimed, yet again, slightly down-market, were left wishing. One or two did note the "delight in irreverence" which made *Soap* and *Not the Nine O'Clock News* popular with young people, many accepted that young people liked to see one of their selves on the screen ("they identify with them", said David Green, BBC TV Manchester, with mild surprise) and all agreed that you've got to have music, any real opportunity one must look to Channel 4, which, Paul Bonner assured the conference, "will most certainly discriminate positively in favour of those groups that think they have been discriminated against", and has invested £250,000 in film and video workshops for young people. On the present showing, the broadcasters have no justification for surprise when their target audience shout back with the Pink Floyd: "All in all, it's just another brick in the wall".

Bloodaxe and Idi Amin

James Bromwich reviews a popular history series

In Search of... Written and presented by Michael Wood BBC2.

Tenth century England is probably one of the least known periods in English history. A vague impression of Athelred the Unready and, perhaps, Danegeld and its significance in the origins of English taxation, are the usual extent of knowledge.

The achievements of Alfred the successor kings in uniting England, and the evolution of the north beyond the Humber, with its complex mix of Saxon, Briton, Scot and Viking, deserve to be better known. It is an exciting and important stage in the development of the modern social, political and cultural pattern of Britain.

Michael Wood's first three programmes in the recent series set out to rectify this inadequacy. Their impact and immediacy was due partly to Michael Wood's dynamic enthusiasm and partly to, at times, ravishing photography. They also manage to cover a wide range of historical material.

However, the deliberate twentieth century media treatment suggests that the producer or writer were perhaps confident of the implicit appeal of the material. Modern words and phrases were used to capture the attention, and through their current emotive implications to give an impression of the impact of events and features of the past. St Cuthbert's vault in Durham cathedral "crackled with spiritual radioactivity", the attraction of Eric Bloodaxe to his contemporaries was seen as being similar to that of Idi Amin.

Although some of these analogies may have contained a rough truth, some of the images were rather less helpful. Athelstan, we were told, "swept" Britain with "a blitzkrieg". The most memorable mental picture this will have created would include the gathering of warriors and peasants for a summer campaign.

The most deliberate incitement of modern imagery occurs in the first programme. The Don valley is described as a major frontier zone between the Southern English and Danish kingdom that Athelstan inherited and the heterogeneous mixed society centred on York. Not only is this

described as a "de-militarised zone" (and there is no evidence that it was actually seen as such), but we were also introduced to the area by helicopter. This style of treatment perpetuates the belief that history has to be "sold".

The tenth century is examined through three leading individuals: Athelstan, "the great king", Eric Bloodaxe, the epitome of the violent Viking warrior, and Athelred, the weak, if intelligent, leader of the time would have approved; they lived in a credulous and seemingly miraculous world over which leading figures seemed to stride.

But the benefits of being able to follow the progress of one human being in the past are balanced by some appreciable costs. The contributions of other people are missed. The role of Athelstan's father, Edward, in the conquest of England is seriously underplayed, and the 26 years of Edgar's reign in the latter tenth century were probably as significant in the consolidation and permanence of the English state as Athelstan's wars.

However the major weakness of the series was one of style. High tension was maintained throughout the programme. Crashing seas, crackling flames, windswept scenery of bleak moorlands and mudflats were combined with the dirge-like electronic music and the somber tone of the script to emphasise strained conflict. This is not only a difficult state to maintain for nearly an hour, especially when it depends so heavily on the imagination of the viewer, but it is also historically one-sided.

The series was at its most effective when it provided a real view of other aspects of life. Richard Bailey's intelligent comments on the Gosforth Cross Bloodaxe to his contemporaries was seen as being similar to that of Idi Amin.

A real love for subject matter can be shown on television — this has been demonstrated above all by David Attenborough's series on natural history. Michael Wood has the intelligence and his conviction that anyone could relate to the Early English in this way was obvious, and a long way from his inflated style for "events".

A real love for subject matter can be shown on television — this has been demonstrated above all by David Attenborough's series on natural history. Michael Wood has the intelligence and his conviction that anyone could relate to the Early English in this way was obvious, and a long way from his inflated style for "events".

To some extent this is inevitable: who can explain the structural significance of totemism to six-year-olds? They know already, in a sense, inhabiting, far more than we do, an intensive, mythological, symbolic universe. It seems a shame to reduce their understanding of the rich tribal cultures of North America to facetiousness and "how to make a two-inch model teepee". Despite its obvious goodwill, this is all the series manages to do, though it does include some interesting film, of unstated provenance, purporting to show some interesting film, of unstated provenance, purporting to show Plains and North Western Indians in their traditional lifestyle.

The BBC has compiled a list of museums holding North American Indian materials of interest to primary school children. Among these are the museums which have held teachers' seminars. Those marked with an asterisk offer some sort of information service for schools. Interested teachers should contact the Education Officer of the relevant museum.

resources/media Briefings

Radio and tv OU and general interest

Campus Radio (Friday, 23.00 VHF4) Student broadcasters are given the chance to talk about their interests. Topics range from robotics (Warwick Univ.), community policing (Exeter Univ.), to the value of a degree (Leeds Univ.).

Play Tennis (Monday, 18.55, BBC2) Lessons intended to encourage people who have never played tennis. Shows how two beginners can help one another to learn methodically, and how large classes can be split up.

For schools

Today and Tomorrow (Monday, 9.52, BBC1)

A new series aiming to inform 11-year-olds about current developments in science and technology.

Encounter Spain (Monday, 11.40, Tuesday, 14.14, BBC1)

Descubra Espana (Wednesday, 14.45, Friday, 9.50, BBC1)

A new group of programmes in the "Encounter" series, this term featuring Spain and Spanish. The first "Encounter Spain" shows life in a Castilian village and the old provincial capital, Valladolid. Its counterpart for those in their second or third year of Spanish deals with Spanish dialogue and commentary.

Exploration Earth (Monday, 14.00, VHF4)

Maps and Pictures is a radiovision programme to introduce 10 to 12-year-olds to map reading and the interpretation of aerial photographs.

It's Maths! (Tuesday, 9.35, BBC1)

9 to 11-year-olds begin work on the first concept, which involves two variables.

Seeing and Doing (Wednesday, 9.30, Thursday, 11.27, ITV)

Two programmes set in the Tower of London offer 6 to 7-year-olds an insight into the background of pageantry in the middle ages.

Politics — What's it all about? (Wednesday, 10.35, Thursday, 9.30, ITV)

Five "Current Reports" this term give the over-fifties the opportunity to discuss matters of current concern.

Nature (Wednesday, 14.35, VHF4)

Continuing its link with the RSPB, Nature features "The Kestrel".

Good Health (Thursday, 11.10, ITV)

What is it like to have a disabled person in the family? How does that person cope with everyday problems? 8 to 12-year-olds meet a young spina bifida victim and his family.

Marjorale College, Aberdeen

*Bath — American Museum, Claverton Manor, Bath

*Belfast — Ulster Museum, Botanic Gardens, Belfast

*Birmingham Museum and Art Gallery, Chamberlain Square, Birmingham

*Brighton Museum, Church Street, Brighton

*Bristol Museum and Art Gallery, Queens Road, Bristol

*Cambridge — Museum of Archaeology and Anthropology, Downing Street, Cambridge

*Edinburgh — Royal Scottish Museum, Chambers Street, Edinburgh

*Exeter — Royal Albert Memorial Museum, Queen Street, Exeter, Devon

*Glasgow City Museum, Calvin Grove, Glasgow

*Ipswich Museum, High Street, Ipswich

*Leeds City Museum, Minipal Buildings, Leeds

*Liverpool — Merseyside County Museum, William Brown Street, Liverpool

*London — Horniman Museum, London Road, London

*Oxford — Pitt Rivers Museum, Parks Road, Oxford

*Saffron Walden Museum, Museum Street, Saffron Walden, Essex

*Aberdeen Anthropological Museum

*Aberdeen Anthropological Museum

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Craft, design and technology

Home grown in Brent

Peter Dormer on a London retraining scheme

It is hardly news how, during the early 1970s, several local education authorities found it difficult to recruit craft teachers.

The situation was particularly fraught in London, and following the fatal symmetry of educational planning, the shortage in craft and other specialist teachers coincided neatly with the demands of raising the school leaving age.

Today there are the additional excitements of meeting the government's core curriculum demands, while trying to establish a practical and sensible staffing policy in the context of diminishing school rolls.

The London Borough of Brent's solution is vested in a scheme it began in 1973 whereby existing teachers were re-trained to teach craft. The Brent scheme was and still is home-grown, and it has been an important factor in countering the shortage of craft teachers. Moreover, the conversion scheme now has an extra advantage: it provides the authority with craft teachers who can also teach other subjects. And that is a valuable flexibility given the current demand for a broad core curriculum at the same time as the Department of Education and Science looks to the falling rolls to provide reductions in staffing.

The conversion course aims to give an experienced person with a good teaching record, a basic knowledge and practical competence in wood and metal work.

The course is biased towards the particular school to which the trainee craft teacher has already been

appointed, although no training takes place on-site because this would undermine the teacher's authority later on.

Knowing the school that the teacher will be working in means that he can be groomed to meet the needs of the school's craft department and, since the head of that department has some part in the training, it provides a unique opportunity to match a person's training to the job in hand. Admittedly that sounds limiting for the teacher concerned, but such is the soundness of the basic training received that several of the "graduates" have been snapped up by other authorities.

The course begins with twenty days spent consecutively in the workshop and this is followed by one day a week training for 20 weeks. In the second term there is also an evening class in which basic skills are enhanced, and these sessions are taken by one or two of the LEA's experienced craft teachers. A constant emphasis upon common sense and successful classroom practice is thus ensured.

Clearly the amount of workshop tuition compares quite favourably with the amount of workshop tuition received by students at college. The aim is to teach traditional methods in wood or metal work to the greatest possible depth in the time available. The philosophy is that in laying down a sound knowledge in wood or metal work it is then realistic for the teacher to develop further in the specialism and so improve his career prospects. In woodwork, a trainee will make



The aim is to give a basic knowledge and practical competence in wood and metal work

basic constructions in solid wood; frame construction; mortice and tenon joints; dovetails; solid and laminated wood bending; and hand and pressed veneering. In metal there is bench, machine, and casting work.

During the course a teacher will make an item of furniture. One woman physical education teacher, for example, has recently finished an excellent coffee table made in teak. This was rescued from a discarded laboratory work bench.

A lot of time is spent working on projects that will be done later with children, and guidance is given on how a craft project, such as building a kite, can be linked with subjects like elementary physics or art.

Another advantage of having the head of the school's craft department involved in the training is the advice he brings regarding the kind of project that might be worth trying out.

Initially, the teachers who are thus retrained are intended for the lower years of secondary school. This allows the more experienced staff to take older pupils through the examination work in the knowledge that a foundation of basic skills is being laid down

from the beginning. Thus continuity from first to fifth years is maintained—also it is in the lower years that a school finds considerable flexibility among its staff a considerable asset in drawing up the timetable. About half the teachers who have completed the conversion scheme have been from art specialisms, but the rest came from a wide range of subjects.

The training is largely carried out by the borough's craft and art adviser, Jim Turner. His experience has been in grammar, secondary-modern, and comprehensive schools, and includes many years lecturing and running a craft department in a teacher training college.

He says that the success of the course (it has provided 10 per cent of the craft teachers in the authority) is derived from two essential factors.

First, the selection of teachers for retraining is carefully carried out, and the qualities looked for include successful previous teaching experience, and a real desire to retrain.

Secondly, because the course is oriented around individual schools it has meant that teachers have been fitted rather than thrown in to their departments.

There are disadvantages. When a teacher trains teachers on the conversion course he cannot be running a variety of in-service exercises or spending as much time as he would wish on day-to-day advisory work.

But the justification is obvious. It is considered that an L.E.A.'s most important resource is its teaching force then a logical first step is to make sure the teachers exist in the subjects required. In-service teachers are a curiosity if you are about to send on them.

There is also the view, a contentious one, that heads of department themselves should more seriously tackle the role of in-service work in their department's staff.

Really it is a question of how to direct the resources that are available. In Brent's case the need for teachers of particular skills was felt to be paramount and it was seemed desirable to use the advice of a teacher trainer.

No doubt out of work, teacher trainers might debate the point, but the needs of the children are hardly suitable grist for a demarcation dispute.

Towards a technological curriculum

By Paul Griffiths

The recent heartening news that Craft, Design and Technology now ranks as a member of the exclusive DES Committee Club has come while this area of the curriculum is receiving favourable public discussion stimulated by the Finniston report, and from the Design Council's document, *Design Education at Secondary Level*. These continuing discussions of curriculum policy should look specifically at the increasing importance of technology and at the issues in establishing it as a school activity, both across and along the curriculum.

Some might claim that technology already appears on many school curricula, though its form often varies significantly. Some commonly encountered interpretations follow.

1. Most commonly technology is regarded as synonymous with craft workshop: theory. "Technology" sessions teach theoretical knowledge of craft tools and materials. This is a traditionally valid description of the area, but deserves close scrutiny in light of contemporary aims.

2. Another interpretation depicts technology as applied science. While the application of principles of science plays an important part in technology, in science the two areas do not have the same relationship.

3. The technology syllabuses packages of knowledge, which are often seen as the systems of a working definition.

electronics, pneumatics, and structure, is sometimes regarded as a technological education. However, this approach forms one aspect of a technological education but that end is not fully realized unless such knowledge can be applied to problem solving.

It is apparent, then, that technology is a concept which has come to hold various meanings, and, while the educational value is not challenged non of them adequately represents a full picture of technological education. At the risk of being prescriptive, it may be valuable to explore in more general terms, what being "technologically literate" means, and how the curriculum can be structured to achieve it.

All the above interpretations of school technology attempt to depict it in terms of the knowledge which it supposedly represents. However, curriculum implications are clearer when one looks at technology centrally as the description of an activity rather than as a title reflecting a certain body of knowledge to be acquired. Gordon Child's account of technology as "activities directed to the satisfaction of human needs which produce alterations in the material world" provides a succinct statement of technological ideas. By adding Patrick Nutgens' idea that the root of technology is "creative ingenuity" we have the

beginning of a working definition. Defining it as the solving of human

problems and achieving human purposes through the creative adaptation of the three dimensional material world raises what we might call the paradox of technology. This is simply that the solution to specified problems may violate the needs and freedoms of other groups in society. Similarly, agreement is not always reached on what the "problem" is, resulting in consequent disagreement about the "solution".

The nuclear power debate is a well-known contemporary example of the paradox of technology; while helping solve the problem of energy production from finite resources, it poses the sensitive ecological issue of environmental pollution. Similarly, the reduced dependence on human labour resulting from the industrial application of micro-electronics has beneficial effects by reducing the need to employ human labour on mundane tasks, but negative effects if the labour force has expectations derived from a more rather than a leisure ethic.

The alternative and appropriate technology movements as exemplified by writers such as Schumacher remind us that technology is about human material problems, but not at the expense of environmental and social considerations. "Technology with a human face" is ideal balance.

Continued on opposite page

CDT



Field trials of metal detectors designed and made by pupils at a recent 6th form Conference at Avery Hill College.

"Towards a technological curriculum"

The paradox of technology highlights two essential features of technological awareness. One is the actual development and construction of three dimensional means of meeting human needs; the second is the preparation for life in a rapidly changing technological environment. This requires a critical awareness for coping with and influencing the environmental, social and moral issues technological development raises. Consequently, any fully-conceived technological education should include both of these aspects.

The ability to identify, analyse and solve problems which call for three dimensional solutions has received recognition as a valuable, indeed essential, aspect of a child's intellectual development. However, this ability cannot be achieved in a conceptual

vacuum and should draw on understanding from various forms of knowledge. Applying relevant ideas from science, for example, will enable problems to be solved more effectively. Additionally, applying knowledge of electronics, pneumatics, and structures, as described earlier, to problem solving is an important feature of the school technologist's skill.

It is, however, the technological process: that process shared historically by the Arkwrights, Telford, Brunel and others contributing to technological achievement that is of central significance. It is the ability first to find and analyse it, wrestle with creative ideas constrained by the discipline of available resources and knowledge, and emerge, finally, with a solution.

The activity has greater value if both the problems and the knowledge applied towards their solution have a contemporary relevance. By employing,

for example, knowledge of micro-processors, not only are the possibilities for design solution extended, but an opportunity is provided to discuss associated social issues.

As such, a full technological education lies in integrating knowledge from various fields and reconciling the often conflicting claims of social concern, morality, science, mathematics and aesthetics in the context of a technological activity.

From all this, three main issues relevant to the planning of future curricula can be drawn.

1. Technology ought not to be regarded as an activity which starts and finishes in the sixth form, as an optional third A level to enhance maths and physics. Neither should its main justification be seen in terms of its value as a liberal studies area. True technological ability, like ability in any discipline will be developed seriously only engaging pupils' interest in the subject early in their school careers and providing courses which sustain motivation through to sixth form level and beyond. In short, the requirement is for technology along the curriculum.

2. Technological literacy in a full sense calls for integrated understanding. Probably the most appropriate point at which to begin a technological education is at the primary/middle school level. Here the curriculum structure is already devised to employ integrated approaches to learning. "Technology across the curriculum" aptly captures the essence of this approach to technological education. Courses of Initial Teacher Education have recognized this need and technological options now exist within middle age-range courses. Hopefully, schools will fully utilize this new range of middle school expertise.

3. Finally, if our curricula are to be relevant to society's needs and the needs of individuals living the large part of their lives during the next century, then the two fundamental aspects of technological education, the problem solving and evaluative abilities, must firmly feature on the curriculum for all ability levels. For too long in the past what might be regarded as the antecedents of technological activity have taken their place in the educational second division. Technology is not to be regarded as the panacea for the so called "less able" where such children are often engaged in practical pursuits which resemble occupational therapy rather than education. Neither is it to be designed to be accessible only to a small elite of the school population. The intellectual, personal and national values of technological literacy for all children have been well argued recently and hopefully we will all be able to meet the change and challenge this area brings.

Paul Griffiths is senior lecturer, design and technology, Avery Hill College.

A sound foundation

David Jones on CDT in the middle school

It is the aim of all subjects to command their rightful position within the curriculum. In the middle school the transference from a primary/pulse orientation to that of a secondary approach poses many problems. Recent developments, however, upon craft, design and technology, provides strong evidence that the subject should be central to the range of experiences offered within the middle years in view of its unique content which, when carefully and sensitively taught, develops the visual and manipulative skills alongside those of imagery and literacy—in short—a superb ground for learning.

In recent years much work has been done to rationalize the content of courses with great emphasis laid upon the development of correct attitudes and concepts. It is important that this development be continually directed and supported through well structured in-service programmes offering a range of multi-media activities in both two and three dimensional work. In this aspect of the development method would seem to be of greater importance than content—it could be claimed that the method is the content. Within the

multi-choice situation it is the methodology that must be right if the objectives are to be fully achieved. A major problem, however, is the continuity of education between the middle and upper schools. In order to provide this continuity it is essential that some parity of provision exists within the middle school workshop/studios in relation to an accepted core curriculum within craft, design and technology, to which both staff (men and women) and pupils (boys and girls) can work.

Briefly, what is common to all interpretations of the term craft, design and technology education is a community of aims. These aims can be grouped under the following headings:

- (1) Communication and vocabulary; symbolic representation.
- (2) Creativity and techniques of problem solving.
- (3) Techniques and knowledge.
- (4) Affective experience.
- (5) Experience of the properties of materials.
- (6) Constructional aspects of design.

While it is right and proper for the purposes of discussion to define craft,

design and technology in these terms, it must always be borne in mind that the subject can be interpreted in a wide range of ways, and that it is to be transmitted this aspect to one's pupils to deprive them of an almost unique experience. The overall diagram provides the framework to enable teachers to develop a visual/problem solving approach to their work.

- (1) Promote the ability to develop solutions to sequential two and three dimensional problems using a logical series of images and visual statements of these to arrive at acceptable final proposals and solutions giving experience in both the conceptual and manipulative fields.
- (2) Drawing to be concerned primarily with:
 - (a) Being able to communicate
 - (b) Being able to understand a communication
 - (c) A thinking aid
 - (d) A method of communication
 - (e) A method of personal recall

CDT

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New waste land for old

Sebastian Loew on three studies of urbanisation and development



Urbanisation, Housing and the Development Process. By David Drakakis-Smith. Croom Helm £15.95. 7099 0464 9.
Politics, Planning and the City. By Michael Goldsmith. Hutchinson £9.50. 09-141371 2. £4.95. 141371 0.
Britain's Wasting Acres. By Graham Moss. Architectural Press £13.50. 85139 078 1.

The postwar era started with a flurry of enthusiasm to build a new world, not only in countries of advanced economies such as Britain but also in the poorer nations, most of which gained independence from their colonial masters. One of the characteristics of this period has been the expansion of town planning legislation would avoid the problems and excesses of the prewar period. Slightly later, a number of projects were initiated, applying similar principles in the Third World, where rapid urbanisation and industrialization were taking place.

Thirty years on, this enthusiasm has been replaced by disappointment, confusion and neglect. Whether the results in the present Tory policy of dismantling the planning machinery and apparently encouraging a bankrupt private sector to take over, or in Marxist attempts to bring about a new era of planning, the cause is the same: a lack of confidence in planning. In different ways these three books reflect this feeling and make for rather depressing reading. They are particularly discouraging in that they offer very few new ideas on how to achieve better results. The authors seem to shy away from suggesting solutions which might be judged by the next generation as severely as they are judging the previous one. However, the conclusions that can be drawn from them may be different than those

intended by the authors.

Of the three, David Drakakis-Smith's book is the widest in scope: it analyses the process of urbanization and development, particularly in relation to housing provision, in the Third World. The majority of the examples are taken from Asia, though other continents are mentioned as well. A first criticism of the book is that it attempts to encompass the developing countries under one umbrella: the differences of culture, political system, level of development are such that it is impossible to generalize or even to find a satisfactory way of systematizing the differences. To a certain extent, the author acknowledges this difficulty but still draws conclusions from examples as if they were applicable to other situations. The book analyses in depth the different forms of housing available to the urban poor in the Third World. Four categories are considered: squatter settlements, slums, government housing and the private sector. Each of them is subdivided and set within the context of particular countries.

A good part of the analysis is based on other studies but some are the result of the author's own research: with practically no exception, they come from Western-capitalist oriented countries. Mr. Drakakis-Smith demolishes every single form of assistance, or the lack of it, to house the urban poor. Authorities are accused of bias, collusion, indifference, callousness, whether they relocate them in unsuitable squatter houses or do nothing. Most criticisms are so evident that they lose credibility. So for instance, that he loses sight of the fact that the urban poor are rejected as invalid while others based on "radical studies" are said to have "clearly shown". Additionally he does not offer alternatives and though he claims at the end that the book "has concentrated its atten-

tion on the more realistic goal of reviewing the range of ways in which the funds themselves may be more usefully allocated." It is hard to find them. The lack of consideration of Socialist approaches is distressing since it would be useful to see how other systems than the capitalist one have managed. Cuba is briefly mentioned, but not as a success. Only the last chapter takes a more positive approach, mentioning the Socialist block and the interrelationships between housing, education and health. It also makes a few suggestions but they come too late and are too superficially discussed to correct the balance of a depressing text.

The second of these books, *Politics, Planning and the City* gives a much more balanced view and has a more positive outlook. It also deals with the contemporary city and its problems, but its scope is limited to Britain. It analyses the roles of the politician, the officer and various associations and their relationships with the electorate. As opposed to the previous authors, Mr. Goldsmith examines a number of models of city politics - from a conservative institutional one to a neo-Marxist one of class struggle and shows their limitations, but he does not reject any of them: a fusion of them all is seen as the best way of understanding what happens in the city. Urban areas, industrial and social aspects, political and institutional. In particular, the social aspects are analysed in more detail: housing, planning and the social services. A lot of the material is not particularly new or original, but it is very clearly presented and it emphasizes the importance of research topics which have been neglected up to now: the "front-end" of institutions, those policy areas which never become part of an agenda and the outcomes of policies, i.e. their effects.

desired or not, on whom and at what cost. Typical subjects are also included and explained in a scholarly and accessible way: the power relationship between central and local governments, the internal organization of local political parties, the role of the press in communications between electorate and elected representatives. Important issues are raised throughout, but again as in the previous book, the last chapter asks a number of questions and only gives speculative answers. However this is certainly a useful text for anyone interested in urban problems.

The main subject of *Britain's Wasting Acres* is derelict, unused and despoiled land, the destruction of forests, the waste created by mining and quarrying, the decline of cities. More generally it looks at the other side of the coin of our prosperous contemporary life with all its mod cons. It is a gloomy book with numerous photographs, expensive to buy and probably costly to produce in view of the author's care for our national environment. It is fair to ask whether a number of readers could not have been saved if the book had not been printed. The text is mainly descriptive and explains only superficially the causes of the problems, ignoring, for instance, the present employment situation. The main message is that the land of Britain is being destroyed through careless planning and reckless development - has been analysed better in other books and is here hammered through constant repetition. More important, the only suggestions made towards reversing the wastefulness of our society are in the form of a National Land Use Survey and the development of environmental education. Neither of them will do much except to postpone real action to a later date.

As mentioned at the beginning, planning

is attacked in the three books as inefficient. However, in all cases the attacks are only valiant. For Mr Moss, the problems of the past 30 years are the result of lack of information and co-ordination, a weak planning system which cannot stop the excesses of politicians, the poor choices of politicians. For Mr Drakakis-Smith, investment in housing for the poor has been insufficient and wrongly allocated: lack of data and poor co-ordination are again mentioned among the causes, together with the political and economic bias or the ruling classes. Mr Goldsmith, though more positive, sees planning as weak in relation to the power of development and public, local politicians and central government's economic direction. He also points out the difficulties for the planning profession in finding a new role in the present situation where so much development is taking place.

This, then, seems to be the crux of the matter: we do not need less but more planning, better and more powerful to "manage" policies. In a period of full employment one, local authorities should dismantle their planning departments and on the contrary take advantage of the situation. They should develop and perfect their information systems, prepare co-ordinated policies involving all the relevant sectors, establish firm directives to protect the cultural land, consider carefully the impact of their housing, problems, development, community relations, etc. In their different ways, these three books could have played at least some of these suggestions. In the years time, there may well be a development boom once again. If authorities face up to their responsibilities now, they will find themselves unprepared and repeat the mistakes of the past 20 years.

extra

Computers in education



A pupil uses a microcomputer at Houghton CP School, which was one of the first primary schools to buy its own microcomputer.

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Primary concerns

Bob Coates on microcomputers in primary schools

Judging by the interest prompted by the launch of the DES Microelectronics Education Programme and the DoT computer hardware projects, one might be forgiven for considering that all the emphasis in educational computing was at secondary and tertiary level. During the Easter holiday, a conference of 130 or more teachers, lecturers, and college lecturers, met at Exeter and demonstrated that the micro revolution is taking a firm grip in the primary schools too.

There is a certain pioneering spirit amongst a select band of primary school teachers - they probably number less than 200, but the ranks are swelling fast. The computer in the primary school classroom is a relatively rare phenomenon, but the educational worth has been proselytized by a few pundits, and the enthusiasm generated is beginning to take a concrete form.

There is good cause for this degree of excitement. First, the Microelectronics Education Programme has declared in its aims that whilst its main focus will be on the secondary school curriculum, the Programme will be concerned to assist appropriate developments in primary and middle schools.

Secondly, in announcing a matched funding scheme for computer purchases in the secondary sector, the Department of Industry indicated that some were being made to promote some activity of a similar nature in the primary schools too. Also of significance is the announcement by the BBC that the

forthcoming computer literacy series will feature primary age-range programs amongst the software associated with the T.V. programmes. The series, called *First Byte* and scheduled for screening in January 1982, will be supported by a large issue of software for the BBC computer. Part of this software will be in the category "education for the home", and it is intended that the first teaching materials should highlight early English and maths work. The specifications for these programs will be written by practising primary school teachers.

Several I.C.S.s have taken initiatives in the primary school computing field. In some areas, this has resulted in positive encouragement to the teachers and advisors concerned. In others, the thinking has just got past the planning stage. However, I.C.S.s who are not yet considering the question may soon be in for a rude awakening. It is perhaps not surprising that teachers who have been "bitten by the bug" and purchased computers for their own interest, are finding sound use for them in their classrooms. As hardware prices continue to tumble, I.C.S.s may find micros in use in their schools before they have defined a coordinated policy.

The general upsurge in activity has prompted responses from a number of organizations and institutions. As an ILA, inspector commented recently, "I don't think that because the kids are smaller, the machines

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can be smaller too". The hardware aspect is only the tip of the iceberg. A decision to use computers in the classroom must be justified by sound educational reasons. The problem (if there is one) is the same for primary and secondary. Teaching "computer awareness" in vague terms is not really a strong enough case in itself. As primary teachers and headmasters begin to consider entering this new field, one would urge a long cool look at the educational objectives.

Here the primary schools have the advantage over the secondary sector. There are no obvious slots in the curriculum, and fewer existing courses or previous activities which could condition headteachers' responses. The unfortunate tendency in the secondary school to confine the computer to the maths department, and to teach computer studies, is a policy which is now being called into question.

To ascertain the educational applications across the primary curriculum, it is necessary for the teachers to know something about the possible uses of computers, and to gain a background understanding of their working.

If the micro is an important educational tool it is necessary that a general awareness of the applications must filter through to teachers. This is the responsibility of the I.E.A. in-service training schemes, many of which will be bolstered by the Microelectronics Education Programme: a major part of the remaining £8 million is to be spent on in-service training. The content of the MEP general awareness courses will be appropriate to all teachers, both primary and secondary.

Clearly with so many openings, much will depend on teacher initiative. Experience has shown that valuable fresh ideas are best generated in a classroom context. This can only happen if the teaching force as a whole has access to information and training. It is irresponsible to buy the hardware and leave the rest to chance.

The computer should be seen as a tool, or as a teaching aid, and not as a replacement teacher. It is unlikely that computer programs will really become lessons in themselves. Although there are a few exceptions, most require some teacher involvement either before or after the computer exercise. Within the constraints of the present hardware provision one can anticipate that at best, a small group of children can be left working with the machine, freeing the teacher to participate in other classroom activities.

One of the problems is the generally held view that computers are "number crunchers" dealing only with figures, bank balances, accounts and the like. The range of applications is really as wide as the imagination.

In addition, primary schools should not attempt to teach computer programming. Enthusiastic teachers have employed computers from pre-reading ages upwards. Starting with simple matching exercises, one can progress to character recognition, word matching, plurals, and the like, and not a number in sight! Some of the best ideas have employed a "game" element. Game-based exercises generate discussion among the pupils involved, with frequent references to the teacher for expert assistance (not in computing, but aspects of the subject under discussion).

At present computer aided learning (CAL) seems to focus on devising aids to meet our present objectives in learning. One is tempted to consider a more radical view: a new definition of goals in our approach to learning. We are moving towards an information-centred society, should we be encouraging greater use of information handling skills in our schools? Primary school children ought to be used to manipulating simple data bases, or even creating their own. Perhaps Information Retrieval should be considered as "the fourth R". Our profession is not only concerned with disseminating facts, but also generating understanding.

Bob Coates is Manager (Computing) MEP.

Screen tests for computer literacy

David Hall discusses the BBC's massive computer project

Educational broadcasting, like the rest of the educational world, has an obligation to face the stimulating and hazardous challenges of microcomputing. As part of a long term commitment to the area of "information technology", as it now seems to be called, the BBC Continuing Education Department - which pioneered the adult literacy *On The Move* project in the late '70s - is now preparing a computer literacy project for 1982.

Series to date have included *The Silicon Factor* and a new series, *Managing the Micro*, is due for transmission in May and June this year.

The primary aim of the project is to introduce beginners of all ages to the practical and intellectual challenge of computing and to the wide range of tasks that computers can do. But the project is also seen as the opportunity to do two other things: first, to provide impetus for the development of good British consumer software in a range of areas; and second, to push forward with the new ways of distributing software, especially "teletextware".

Teletextware is the method of sending computer programs and data by Teletext (or by Prestel) so that they can be received, stored and run on a microcomputer connected to the domestic television set. We are determined to break out of the situation where there is no software because there are no machines; no machines because there is no software. Really exciting possibilities are opened up by the next generation of teletext.

Television programmes form the basis of the project. They will introduce the principles of computing in a practical way and show that it is possible for complete beginners to learn how to program. The series will demonstrate a wide range of practical applications of the microcomputer.

It will be crucial to emphasise what micros cannot do, as well as what they can. The series should appeal to people with or without machines of their own, though it aims to encourage "hands-on" experience because we feel this is the only real way of learning.

To support the programmes, a BBC

book will provide a background introduction to the world of computing, with chapters on problem solving, on programming, and on how things work. In addition, a 30 hour course in BASIC is being written in association with the project by the National Extension College, Cambridge. This, too, is designed for use by beginners, either at home or in flexi-study courses, where a range of colleges will have equipment which students will be able to use under guidance. The course is designed to be as machine independent as possible.

Like the *On The Move* project, a telephone referral service will provide information for viewers about local contacts, courses, enthusiast groups, computer shops and consultants, as well as information about the various parts of the BBC system.

A microcomputer is being made available to a BBC specification to enable the various parts of the project to be consistent with one another and to enable us to develop good software. It will not be essential to have a BBC machine - or indeed any machine - to benefit from the series, and many of the elementary programming principles demonstrated will apply to a number of existing microcomputers.

However, when it comes to applications programs, particularly those involving graphics or sound, virtually all machines are incompatible with one another and the only way of being able to develop these and to develop the other parts of the project has been to produce our own system.

The specification is being made freely available so that any manufacturer can produce compatible equipment in the future. The machine is described more fully in a later article by Paul McGee.

The machine will have a loudspeaker and colour television and video outputs, so that it can be used on the domestic television set or with a separate monitor. Designed to be expandable and even to link with a range of peripherals including other computers, it can be considered the start of a serious system, and in no sense limiting. Eight different display "modes" pro-

vide for high and low resolution graphics and text. Compatible Teletext and Prestel adaptors will be made available as options. BASIC is being used simply because it is the *de facto* language of microcomputers at present, and is probably the most approachable language for the beginner. This is not to say that other languages cannot be used in future. Indeed, the BBC machine will be able to run PASCAL.

We are aiming to make arrangements for an extensive range of programs to be available at three levels. At the first level, there will be simple free, or very low cost, programs that illustrate the wide range of things a computer can do - both useful and entertaining. Some will be directly related to the television programmes, and some will be modifiable to be stored on audio cassette, and tional exercises. These will be obtainable as listings to be typed into the computer, and also on CEEFAX.

The next level will consist of good consumer programs covering such subjects as education, domestic finance and filling, hobbies, games and simple business packages. All of these will be able to be stored on audio cassette, and we aim to make these programs in several different ways, including Teletext and possibly Prestel.

The third level will consist of more advanced software, probably needing a

disc system to run it. This will be capable of word processing, database design, more sophisticated business packages, and so on. Some of this will be "system" software for use by programmers, including data-base management functions.

In the long run, it is software which matters, just as it is the quality of television programmes that matters more than the television set. But we cannot exist without the other, and the BBC has gone to considerable lengths to develop this plan so that both internally consistent and as compatible as possible with existing systems. Many of the programs will be Strong Links are being forged with the DES Microelectronics Education Programme and the SED Microelectronics Development Programme. We hope to produce common standards for a documentation of programs, and to be able to have software and distribute it as far as possible in collaboration with one another.

Further information can be obtained from the BBC Computer Literacy Project, BBC Broadcasting Centre, Room 125 Woodhouse Lane, Leeds LS2 9PL.

David Allen is a senior producer with the BBC Continuing Education Department and project leader for the Computer Literacy Project.



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The offer relates to any combination of items from the Apple retail price list with a minimum order requirement of at least one Apple II System. We regret the offer is not retrospective to the many schools who have recently purchased Apple Computer Systems. This offer closes on May 31st 1981. Orders must be submitted to your local Apple Dealer on official headed notepaper from either your school or your local education or purchasing authority.

Why Apple?

Computer literacy has become an essential part of the world in which we live. We must prepare our children for a different world, where most aspects of industry and commerce will be at least partly computerised. The use of an Apple Computer in school vastly improves computer awareness and banishes much of the mystique which seems to characterise computer use.

The Apple microcomputer can also be used as an effective learning tool not only in the teaching of basic programming techniques, but as a device for multi-disciplinary computer assisted learning. The extensive graphics capabilities of the Apple, as well as colour and animation, are fast out-dating all other forms of visual aids for teaching purposes, and the audio capabilities of the Apple can revolutionise the teaching of music. Speech recognition and speech production accessories are also available. The Apple communicates with children via a medium with which they are wholly conversant, the TV screen.

Perhaps one of the major advantages of the Apple system is that it need not stop working when the pupils have gone home. With little modification, it can be used as an effective administrative tool taking the tedious out of maintaining school records, organising timetables, library catalogues, syllabuses, sports days, attendance records, and with the addition of a printer the Apple will undertake word processing and relieve the burden on both teaching and secretarial staff.



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We have some exciting plans for all Apple users in schools. Over 200,000 systems already sold worldwide; well over 20% of these are used in education and this represents an enormous commitment to education on behalf of Apple - a highly successful company which is a world leader in microcomputer design and manufacture. In the UK, microcomputer use in schools is still blossoming, but in the USA, where Apple leads the way in education, various States have standardised on Apple in their schools for some years and an absolute wealth of educational programs have been written for the Apple.

Many educational programs to run on the Apple are already available from MUSE (Mini and Micro Computer Users in Education) or The Schools Council 'Computers in the Curriculum' Project based at Chelsea College, Manresa Road, London SW3. Some excellent administration programs are also already available. The computer languages available on the Apple include BASIC, PASCAL, FORTRAN and the exciting new teaching language APPLE PILOT.

For those areas where a sufficient number of schools have purchased Apple systems, we will be helping to establish software libraries and also offering a one-day course for teachers unfamiliar with computers on the best use of the Apple microcomputer within their school.

Many Apple Dealers are familiar with the needs of education and a large number of Apple systems have already been sold. We are currently establishing a network of Educational Dealers who will assume responsibility for sales into education, giving advice and support to schools and LEAs when required to do so. An Educational Services Department has already been established at Microsense Computers Limited. This department will offer direct support both to Educational Apple Dealers and to Local Education Authorities and will thus be in a position constantly to re-evaluate the needs of education, especially in the important areas of educational software, hardware, training and educational purchasing requirements.

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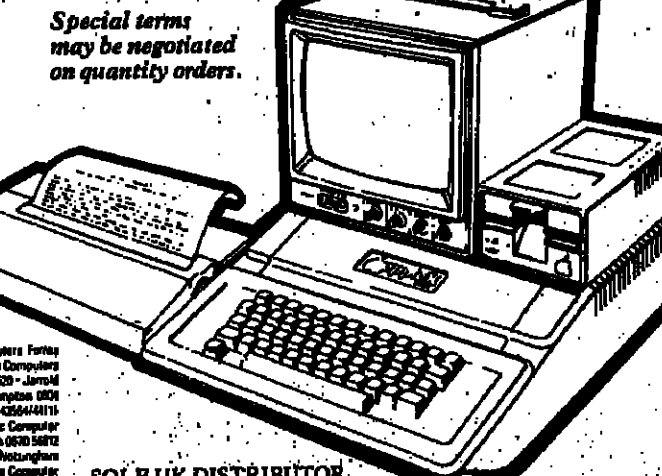
Those schools which already possess a microcomputer will confirm the importance of purchasing a computer that is flexible, easy to use, adaptable, reliable, inexpensive, durable, and above all expandable at a reasonable cost as expertise improves and the requirement for additional languages and peripherals increases. First time users should choose carefully since few microcomputers on the market satisfy the above criteria and a choice made on the basis of price alone can subsequently lead to disappointment. In short, you get what you pay for. The Apple satisfies all the major criteria for use in schools and is without doubt the most expandable microcomputer on the market. It is a system that can grow with you.

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Training: a question of priorities

Clive Neville on in-service training

From recent correspondence in these pages the current version of the "chicken and egg" paradox is apparently "Which should come first: the supply of microelectronics hardware or in-service training?" To some extent the problem will be resolved by the Department of Industry announcement that funds will be available to help schools or their authorities buy microcomputers so that the two can proceed in tandem. In fact it has been made conditional that purchase of a microcomputer shall be preceded by some training of some of the school's staff. This alone may well shift an Authority's priorities: for in-service training, towards "grass courses" to enable staff to qualify for the Department of Industry scheme.

What should an authority's other priorities be? These will vary with the degree of development of microelectronics within its schools and the training already given, but no clear pattern is yet emerging from the various courses being mounted.

Who, for example, will need to have programming skills? Different authorities are responding with answers ranging from "the generality of teachers" through "a specialist teacher/technician in each school" to "only a small group of central located service programmers". The question itself is complicated by the very real possibility that programming in a computer language we currently know it will be an obsolete skill within a few years.

Then there is the question of how and what children should learn about the new technologies. Should they ideally meet them as a subject of separate study, in computer studies or computer awareness courses, for example? If so, how should the teachers of these subjects be trained? Or should children see the new technologies as a tool for use in study, or other phenomena? In which case the priority might be given to updating the knowledge of only maths and science teachers. Would it be better for children to meet the technologies as devices for learning across the curriculum? If so all teachers need to be acquainted with computer assisted learning.

Each of these is being given equal priority in some authorities and all are being promoted within the MEP in-service training programme. Perhaps before an authority decides where it will put the main thrust of its INSET programme it needs to mount an awareness programme for its own policy makers. Without their understanding the resources to support the training will not be available.

What resources are there to support these in-service training activities? The answer, must be, at present, all too few, apart from financial support to allow for the release of teachers, which is expressly excluded from the Microelectronics Education Programme's proposals although some of the other costs of mounting courses will be available from MEP. Support in terms of exper-

tise is thinly spread. It is easy to find the highest level of technical expertise from higher education but that is seldom related to the educational context. With such educational experience in microelectronics have usually required it within local constraints, such as an authority's standardisation on one or two models of microcomputer.

The co-ordinating and commissioning facility of the MEP has great potential for increasing the supply of training material and the ease of access to expertise for in-service trainers. This may be the most effective way of getting the requisite number of teachers trained quickly. The Director of MEP hopes to have provided appropriate training for about 50% of the UK's teachers within the three year programme.

Already training materials have been produced or are being prepared by a number of national bodies, such as the Open University, the National Extension College and the National Computer Centre.

Another problem is the lack of availability of good educational software. Nothing discourages teachers of subjects other than, say, maths and science to explore various aspects of computer assisted learning more than a trivial, or worse, irrelevant program which is difficult to use. The MEP will stimulate the production of programs and, more importantly, ensure their ready availability and have adequate documentation. It is probably premature to attempt to train for CAL

across the curriculum" until a sizeable bank of programs of tested educational worth has been created.

An area of INSET where progress could be made quickly is that of training and support for teachers in special education. The enormous potential of the microcomputer for enabling the severely handicapped child to interact with and communicate through information accessed by the computer is exciting many special education teachers. With support and guidance they will quickly develop, adopt and adapt techniques and programs to meet the individual needs of those in their care. Again the MEP network will speed the process of dissemination of both programs and experience.

The main problems to be overcome in the provision of INSET are threefold. First, the question of who should be trained in what, and how pupils can best be prepared for rapidly changing technological change. This is a matter for debate and experiment largely within I.E.A.s. Secondly, the acute shortage of training resources, and thirdly, the sheer scale and urgency of the exercise. To these problems the MEP proposals may provide some solution if the trainers will accept a degree of co-ordination and provision at national rather than local level. But who, in a fast changing world, will train the trainers?

Clive Neville is a Programme Manager with the Council for Educational Technology.

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extra Material gains

A. K. Hennessy discusses a University of Manchester Institute of Science and Technology project to produce software packages. The article is introduced by Dudley Fiske, Director of Education, Manchester

Suddenly there is a flurry of government activity in the world of computers and microcomputers for secondary schools. We are all becoming familiar with the meaning of terms such as software and hardware. Now, both the Department of Education and Science, and the Department of Industry, at last have money for people who can meet their conditions.

It has been pointed out that those local education authorities which have already put computers at their own expense into secondary schools may

In practice get less than the initiatives now announced. But at least they can rejoice that there are now financial carrots to tempt the laggards, even if there is little recognition by central government of what has already been done by those who are tired of waiting for a DES initiative. The important message is surely that good quality material needs to be rapidly developed for use in secondary schools. Teachers will need help as they struggle to cope with new technology to which their pupils, being younger, will respond with less

difficulty.

The article that follows describes an initiative taken during the last twelve months jointly by four Manchester teachers and four students of the University of Manchester Institute of Science and Technology. This initiative of co-operation is ideal in a city that contains the National Computing Centre and has easy access to expertise, and hardware in high education. The results can now be made widely available to those in Authorities not so well placed in such joint initiatives.

To meet the need for secondary school teaching materials about "real world" computer applications, a team of four Manchester teachers and four UMIST Computer Studies students have collaborated during the current academic year to produce a series of four teaching packages.

They are based on the "live" commercial computer applications of: British Airways airline reservations, Tesco warehouse ordering, Trustee Savings Bank teller transactions, and the 1981 Census. These applications were chosen because they were likely to be familiar to many people throughout the United Kingdom, and so visits to local branches and offices might be arranged to supplement the package materials.

The packages have been carefully designed to fit within the limitations imposed by the secondary school classroom: short class periods, large classes with up to 30 pupils, limited lesson preparation time, and only one micro-computer available.

The project was divided into three phases. First, the UMIST students obtained details of the "live" applications and prepared full formal documentation, according to National Computing Centre standards, of one aspect of each application, called the "focus". Each application description is about 50 pages long and contains full technical details of the focus. These were used to provide the background for the preparation of the class materials.

During the second phase, the teachers prepared a ten-page pupil text for each application. Finally, the teachers and students together prepared sets of exercises and a set of computer and "seat work" exercises to be used during the lessons on the applications.

UMIST students wrote programs for the Commodore PET, which is now available in most Manchester secondary schools. These enabled teachers to demonstrate features of the application and to allow the pupils to get practical

experience in using computer facilities. The team agreed that, given a limited amount of time available for computer studies courses for the year, there would have to be imposed on the length of time needed both for each package of the computer and for each application topic.

They decided on one week for each application, which gave each pupil a class of 30 about 3 minutes on the computer. They stressed the importance of providing adequate amounts of class work based on the application for pupils to do while other children were using the computer. Their calculation showed that this "seat work" would normally take up 80% of the week activities.

The practical material was developed in three parts: a demonstration program for the teacher to run on the PET with a TV monitor for the class lesson to introduce the application; an exercise program that could be run by

Continued on next page

Chalk, talk and CAL

R. M. Trigger on Computer Assisted Learning

Although interest in using the computer for Computer Assisted Learning (CAL) has grown during the last few years particularly with the easier access afforded by the micro-computers and there have been many studies on the place of CAL in schools, the actual use of computers to assist learning has not progressed very far.

A computer allows the teacher to simulate a variety of situations which could not be demonstrated in the classroom by other means (or else by specialist equipment). It allows the teacher to enquire "What if.....?" and can present a variety of alternatives in a short time. The computer may be used for a class demonstration or individually in drill and practice.

There are several reasons why progress in this important area of education has been so slow in recent years: unsuitable and/or insufficient equipment, the teaching package is too expensive, the package is poorly defined and written.

Unsuitable and/or insufficient equipment

Until recently the provision of computing equipment has been very patchy. Some Local Authorities provided access to a central computing facility by teletype. These mainframe links do not encourage CAL, because it is not possible to guarantee connection when required, there is difficulty in maintaining a reliable connection and response time is too slow.

Later, however, local authorities were very quick to introduce micro-computers. But often, when these computing facilities were introduced into a school the school began computer studies rather than introduced CAL. There are several possible reasons for this: the equipment was handed over to the enthusiasts, ignorance of CAL, parental pressures for an examination subject and financial pressures.

It is very difficult to retreat back down the Computer Studies path but the computer is far too valuable a resource to be tied to one department by perhaps one or two members of staff. It might, for instance, be used in school administration (though this probably demands a dedicated machine), departmental organisation (archiving work sheets, continuous assessment, departmental notes), examination marking (or setting), in addition to being a versatile teaching aid.

for the whole school and should be available to ANYONE to use in their teaching.

Often the equipment seems difficult to use, it may be difficult to transport or there may be inadequate display facilities. Hence there is a tendency for a specialist to use the machine and the movement around the school may be limited. There is little hope of encouraging the history department to use the computer if they need either a list of "secret codes" or special hardware in order to get access to their teaching package.

Poorly defined packages

A number of CAL packages are written by computer "experts" who have been brought up to document everything or nothing. There is a need for documentation but at a number of levels, for example:

- To describe the package to the customer listing its aims, methods of use, links with other packages.
- Details of its practical use, preparatory work, follow up work for the user.
- Maintenance/implementation aimed at the "computer expert" who may wish to adjust the package to local needs and conditions.

Take the case of a geography teacher who has seen a package demonstrated by the "expert". He arranges to use the program and is passed a form of documentation in order to link up with the program. Often he/she will say "I have managed without up to now, I'll continue to manage". If, however, the package can lead the user through

Continued on next page

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any pupil as soon as the demonstration had been given by the teacher; and a set of "test work" exercises based on the pupil text material and the demonstration program.

The team agreed that the latter material would be varied in level of difficulty to cater for mixed-ability classes, while the demonstration and exercises programs should be within the ability of at least the upper two-thirds of a mixed-ability class to complete.

Rather than risk all the pupils entering the same material, the team decided to organise the exercise programs for groups of no more than five or six pupils. The teachers felt that pupils would benefit from seeing what response they got from the PET program, and that this should be done in a controlled way so that too many pupils did not crowd around the machine and no pupils would be allowed just to watch the program for a whole week.

Calculations based on a variety of sizes of pupil groups, exercise program schedules and class periods showed that there should never be more than six groups if the entire application package were to be covered in the usual 120 minutes of one week's lesson time.

Each application was also used to prepare the pupils for examination questions on topics other than the applications themselves. For example, the census materials contain an exercise on coding census information before it is keyed into the computer, and the airline reservations package contains exercises in flowcharting. Both have exercises on information retrieval methods.

During the project, UMIST students and teachers also developed a set of standards for schools programs so that they would be robust, consistent, and easy to use and understand. These have now been issued and are available through Paul Murphy, Computing Co-ordinator for Manchester Education Committee, Teachers' Centre, Barlow Moor Road, Manchester.

However, to prepare programs to meet these standards, would-be programmers are warned that the team's figures indicate it takes about 100 man-hours to research, prepare, specify, design, code, test and implement one minute of a robust interactive

computer exercise. The team are looking at ways of providing standard screen- and file-handling modules in an attempt to reduce this heavy amount of programming labour.

Considerable efforts were made to retain the flavour of the "live" application according to the technical specification. The Trustee Savings Bank teller exercises require the pupil to key in his "password", as do the census and Tesco "saver agent" exercises. The latter is guided through each of the main teller transactions of the TSB: cheque deposits and withdrawals, cash deposits and withdrawals, opening a new account, and making an account enquiry. An updated "passbook" is printed at the end of each transaction.

The "teller" is required to keep a running total of his cash drawer and when the transactions are completed, he enters the final cash drawer total. The computer program, written by UMIST student Neil King, compares this against its own total and signals "error" if the figures do not match, just as the TSB computer does. The pupil text materials and exercises were written by Peter Davidson of Parris Wood High School in Didsbury, Manchester. The airline booking exercises use real airport codes such as LAX for Los Angeles, LHR for London Heathrow etc. The various codes used in airline booking are explained and the "passenger agent" is guided through each step of the booking procedures in the same sequence as the British Airways airline reservations system. The "agent" enters flight date, origin and destination to obtain a list of flights available; when the number of the selected flight is entered, the seats are booked and the number of available seats is updated in the flight file.

Passengers' names and special requirements (such as health diet or infant meals) are entered, followed by the name and address of the person to contact about the reservation. The "agent" can also add new flights, make flight or passenger enquiries, cancel booking, or display the airline's full flight schedule or a flight's passenger list.

The airline reservation program was written by UMIST student Kim W Wong, who comes from Hong Kong. The pupil material was prepared by Sylvia McDonagh from Whalley Range High School for Girls, who for the past six years has been providing "guinea

continued from previous page

variety of paths without constant reference to data sheets then it is more acceptable.

Expensive packages

In these days of continual cut-backs the heads of department (or i.e.a. representatives) must consider their purchases very carefully. It is unlikely that a package will be general enough to satisfy everyone's needs. The package should be adaptable to different teaching styles. A package which may be used individually and for class demonstration is more economic.

Badly written packages

There is very little good quality CAL material currently available - consequently what there is, is passed from school to school and often succeeds in deterring the interested user because it is not educationally sound. If a package is distributed on the understanding that it is not robust and still proves useful, then some central body should undertake the task of making it robust.

Some of the good software being produced at the moment is being written by pupils in school - they write the material according to how they would like to be taught; they know (better than adults) how to test for a robust system.

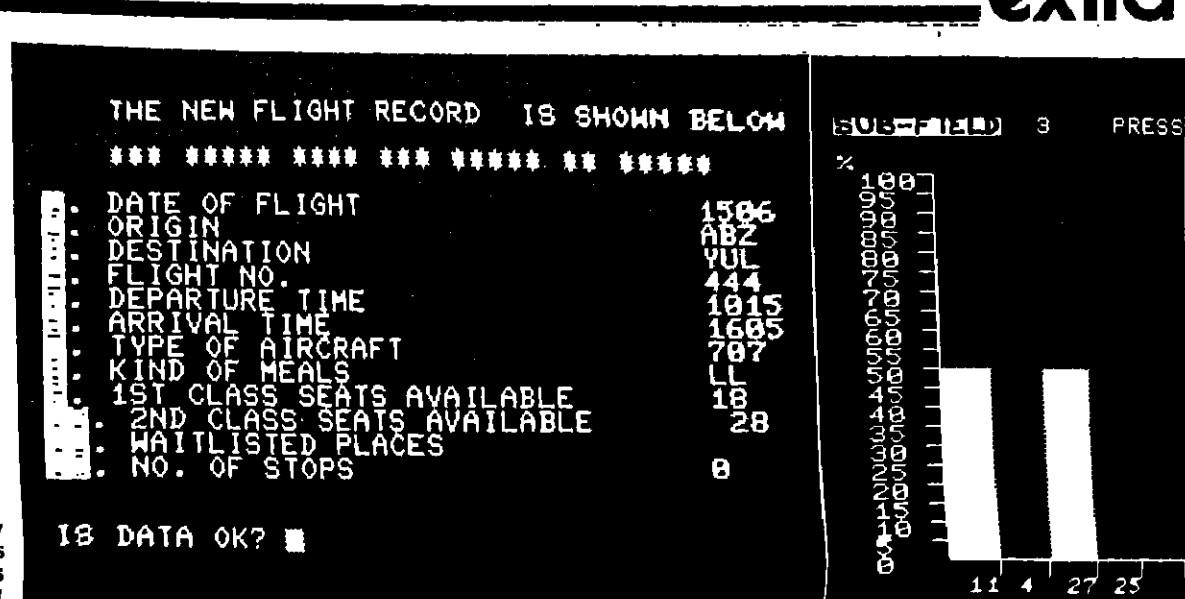
Some of the packages which have been produced do not use the qualities of the computer. Most of the micro-computers have a graphical capability, however some packages still draw graphics as rows of asterisks. Some micro-computers have sound capability; packages should be updated regularly to take advantage of the latest developments. It should be possible to incorporate new features without needing a complete re-write. However some packages still display screen after screen of text - often all in upper case. If the microcomputer can generate lower case, I have heard it said that



"the more text there is on the screen - the less it is read".

The use of CAL is not yet commonplace there are MANY changes which must occur before there is a computer in every school yet. There has not been time to show that CAL is better or worse, than chalk and talk, but one pupil has said to me "I can't say that CAL in physics gave me a better O level grade but the computer made getting the grade easier and more enjoyable. I feel that we should try to make learning easier and more enjoyable, and as quickly as possible."

R.M. Trigger is Information Officer for MUSE. The opinions expressed, however, are not necessarily those of MUSE.



Left: entering a new flight record with AIRBOOK. Right: histogram showing proportion of class choosing hobbies.

pigs" and advice for the systems research doctoral work on which the project is based.

Because the "live" 1981 census contains more rather sensitive items, attention was directed towards preserving the methods used in collecting and processing census data and retrieving it from computer files; while the census content was changed completely. The pupils collect and code information about their hobbies, pets, favourite subjects, signs of zodiac and favourite foods on "census" forms.

This information is entered by the pupils into the computer and they can then obtain analyses of, for example, how many Aquarians who like fish and chips also enjoy studying mathematics. They can also compare the relative popularity of different subjects or hobbies and obtain a histogram to illustrate the figures.

If the teacher does not have time to allow all the pupils to key in their own

personal information, there is a set of "census" data based on work done last year by the pupils at Chapel School in Chapel-en-le-Frith in Derbyshire. Brian Horwich at UMIST prepared the programs and materials, with advice from Barry Allen of King David High School.

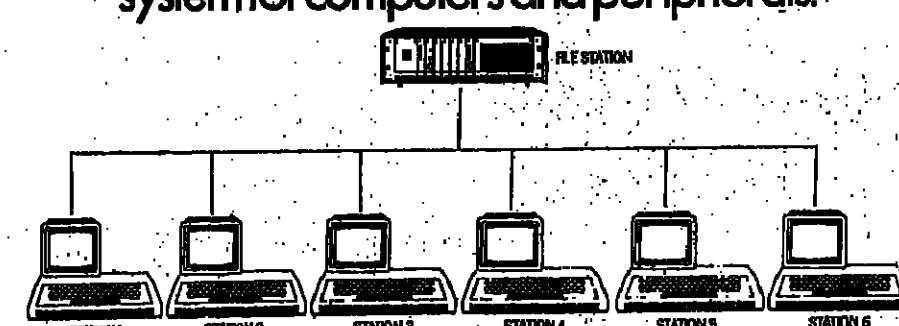
Bob Palmer of Wilbraham High School and UMIST student Neil King collaborated on the Tesco material, which emphasises the warehouse ordering system rather than the supermarket stock system which is described in a number of books containing material on computer applications. Stock items such as cornflakes are traced through from receipt to storage in one of the Tesco warehouses and despatch to a supermarket, and when the stock level drops below the re-order level, the computer recommends that the item be ordered. The "stock clerk" decides whether to order, and what quantities - helped by the computer

program, which can give him the past four weeks' stock levels for any item so that he can see how quickly stocks are being depleted. The order is then placed, and the purchase order is printed by the PET.

All the programs are produced in three versions to operate on three different types of PET configuration: 32K PET with PET 3040 Disk Drive, 32K PET with Computlink Disk Drive, and 32K PET with Magnetic Tape Cassette Unit.

The packages and programs have been handed over to Manchester Education Committee this week, after trials of the materials in schools. Enquiries about the packages can be made to Paul Murphy, who coordinated the project for Manchester Education Committee.

A. K. Hennessy works at UMIST Computation Department.

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extra Software options

by John Anderson

Whenever educational software is discussed it is its non-existence or non-availability which causes most concern. Of little surprise to the cognoscenti in educational computing this problem still disillusions the secondary school teacher-converter who finds that, unlike school text books, cassettes and floppy discs of worthwhile educational software are not readily to hand.

That they should in future be so is, of course, one of the main reasons for the existence of the Microelectronics Education Programme (MEP). However, in our investigation of the means of doing so we have discovered that there are two software gaps, not one.

Aside from the paucity of programs and the patchiness of systems for their dissemination there is also an intellectual poverty gap, a mental black-hole in which pedagogic laws no longer hold and educational commonsense disappears when an enterprising educational author meets the new technology for the first time.

The first problem is that of distributing what (relatively) little software there is. This is being tackled, albeit piecemeal, by CEDAR (Computers in Education as a Resource, Imperial College) records 530 CAL programs in its Package Index, almost all from the UK, but predominantly tertiary and in the numerical sciences and engineering. Its expected growth area is in secondary level programs mostly in the numerical aspects of different school subjects.

CPE (The Central Programme Exchange, Wolverhampton Polytechnic) holds 400 CAL programs, again largely tertiary, mostly written in FORTRAN for miniframes. However its publication *Computer Resources for Schools Education and Training* includes programs from amongst 35 in BASIC for microcomputers, most of which are being converted specifically to run on the Tandy TRS-80. Another 15 programs are listed for the Commodore PET. Again most of these are in the numerical sciences, with fewer in geography and languages.

Both these organisations were helped by the NDCAL (National Development Programme for Computer Assisted Learning 1973-77) which invested most of its £3 million in some 30 development projects, most of these are tertiary programs. The few secondary projects being single CML systems rather than CAL programs.

MUSE (Microcomputer Users in

Education) operate a software library for members and have a full time information officer. Distributed by post, the library includes some 30 CAL programs virtually all for the RML 3802 and almost all secondary level maths, statistics, physics, biology with some geography and history to demonstrate high resolution graphics. Some two mini-discs full of new programs are submitted for inclusion each week and a growing proportion of these are for primary education, especially in mathematics.

To invest some uniformity into the situation, MEP is using the technology itself to tackle the software distribution problem. It is in the process of establishing a nationwide (and eventually perhaps European) data-communications and exchange network for the dissemination and interchange of educational software, as well as textual training materials, reports, newsletters and internal MEP communications.

This network, based on word-processors communicating via the telephone switching network, is already established between MEP headquarters in Newcastle (on which word-processor this article was written), the administrative office in London and the headquarters of the Scottish Microelectronics Development Programme in Glasgow and will encompass the fourteen MEP regions before the end of the year.

The network, by creating a common and accessible source of software to the regions, will also provide the opportunity to implement the software standards being written currently for MEP by the NCC (National Computing Centre). Only by implementing common standards can the obstacles to portability (the ease by which programs can be transferred from one make of micro to another) be tackled.

The objective of agreeing a common programming language dialect for educational software may require rather more persistence and it is more likely that the discrepancies between hardware buses and memory media are more likely to be smoothed out by powerful intermediate software.

Nevertheless, the aim of ensuring high standards of well written and documented programs and well-tailored out and cogent screen designs is achievable, which will allow program writers to focus on the second gap—that of the educational quality.

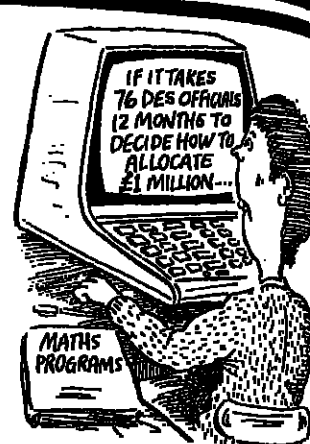
There is a glimmering, but thankfully growing, awareness of the fundamental pedagogic shortcomings of much computer based learning. The public have been fed on the myth (one of the few correct ones as it happens) of the computer as a willing slave which bears the mindless burden of mankind, a reliever of tedium and the repetitious task. Perhaps then we should not be surprised that the first and most popular ideas of teachers for educational applications are in school administration and as an instructional delivery device, doling out dreary drill and practice routines.

In our discussions we have met more and more teachers intrigued to discover the power of the micro which causes the obsessions of their addicted colleagues. They have been seriously turned off by the educational and intellectual poverty of drill and practice CAL. These applications do little more intellectually demanding than computerised programmed learning routines which are more appropriate to training environments.

The CAL community itself illustrates this dichotomy between instructional CAL and rather more sophisticated and imaginative uses of micro as a learning aid. Recently at CAL'81 at Leeds University (with 420 delegates the largest meeting of the community thus far) one heard of the whole to look to the keynote addresses to see glimpses of "inventive" learning with micros.

Professor Tom Dwyer of Pittsburgh University's SOLO/Net/works Project described the use of a micro network to enable individual "players" to simulate the activity of almost any organic or social system: Imaginable, from a ship to a business; from an establishment to a culture; from the human body itself to the entire planet and to learn from simulating one part to interaction with the others.

The educational concept of the potential of micro-networks in the UK too often speaks only the shadow.



IF IT TAKES 16 MONTHS TO DECIDE HOW TO ALLOCATE £1 MILLION...
 MATHS PROGRAM

of that educational dinosaur, the language laboratory. Fortunately, there are some small signs of new direction which will result in programs which take advantage of the characteristics of microcomputers such as their high resolution, dynamic and colour graphics and their comparatively low storage capabilities.

These latter enable larger data-bases which might contain anything from fifty years of statistical information to the Irish American emigration data during the Irish Famine, to the geographical indexes of "National Geographic" magazine or career and higher education information and opportunities. Such files can be manipulated and retrieved by means in search of common patterns, insights into history, the one article relevant which gives the information needed for a geography project or look at educational and career opening.

The British Library are funding an ASLIB project which allows pupils to build bibliographical data-bases and use the information retrieval routines from the international data-base network DIALOG to search them.

The Geographical Association's programme Exchange (GAPE) has developed a package which will use powerful demonstrative and motivating flexibility of graphics in simulations which allow pupils to explore the relationship between process and form in geographical and geomorphological concepts such as settlement-location, gradients and contours, spatial patterns of land use, water budgets, stream flow and erosion. They are also aiming packages at a gap in the market - programs for use in early and middle school years.

At the same time it is expected that the Cheltenham College team, who produced the Schools Council program in Physics, Chemistry, Biology, Economics, Geography and Home Economics and Science simulations, will be redirecting their "path-finding" capabilities into the unexplored area of craft, design, technology, mathematics and language learning. The directions can be practically concept in many ways.

● MEP are bringing together a talented group of young programmers at King Edward Five Ways School in Birmingham as an educational "ware house" available to authors through MEP.
 ● The MUSE library is adopting a policy by which the software user is charged the author's commission. This allows MUSE assessors panels to vet the programs submitted for inclusion and in so doing highlight the educational value of the packages.
 However, the more fundamental challenge is to teacher education. The micro-version of the information retrieval language QUERY has been designed for building and searching data-bases. It has been chosen by the Open University as the first case study in its pilot module of a post-graduate course on Microelectronics in the School.

The very fundamental nature of the change leaves the best of education struggling to convey its potency. It alone prepare the next generation for its reality. Imagine we were 500 years back, not MEP but BEP, the Basic Education Programme introduced into society. What metaphor would we have come near to describing the all pervasive influence of the printed word today? Amongst many other things "books" meant "schools". What form and nature of an educational system will micros and educational software beget?

John Anderson is Deputy Director of MEP.

Special needs

Mary H. Hope on microcomputers in special education

Teachers in special education and remedial education are probably getting used to references to the uses of microcomputers with children with special needs appearing at the tail end of the list. This does not mean however that they accept it, on the contrary. The reasons for the low profile of special education in this field are several, and probably include lack of general or media appeal. It must also be admitted that arguments for the use of microcomputers in the education are based on small scale individual efforts rather than a proven research.

The hope is that programmes such as the government's Microelectronics Education Programme will provide the opportunity for us to learn more about how microelectronics can contribute to the education of these children, and to demonstrate to the sceptics the substance behind the faith.

What has persuaded schools and staff to use precious funds to buy micros? Why is the voice of special education demanding to be heard in the race for these resources? Answers include the individual needs of the child, the ways in which schools and classrooms are organised and the aspects of the micro that make it a potentially powerful teaching aid.

Undoubtedly the most dramatic use of the microcomputer in increasing the quality of life and educational opportunities is with the severely physically handicapped child who needs a way of communicating with the world. Until recently the child with very limited controlled movement, communicated by using a Possum. This used a matrix of letters and numbers, illuminated from behind by a light.

The child spells out a message letter by letter, and letters are selected by the light bar. The child knocks the switch on the row with the desired letter in. The light then moves across the row and again the switch is knocked on the selected letter. Another knock then types the letter out.

The difficulty of communicating and learning when you are only able to produce a letter every few seconds is not difficult to imagine. A number of people around the country have been writing computer programs which offer more flexibility than the traditional Possum, and some have been focusing on specific problems. Patrick Poon at King's College, London, for example, is working on a program which simulates the process of up the communication process, and Phil Odor from Edinburgh University is looking at how systems can be tailored easily to the capabilities of the child.

Microcomputers are helping us go a little further down the road of freeing an active mind from a crippled body. Children who have never had the opportunity to express themselves creatively before are now able to do so and an interesting observation from several teachers using micros in this way is that it enables the child's sense of humour to come through.

The characteristics of successful tuition for many children with learning difficulties include the need for a structured approach with small learning steps and plenty of reinforcement. It is not difficult to see how the micro can help the teacher in this task. There are now quite a few schools around the country using micros to help create a learning environment. For example, the Jane Lane School at Walsall, Riverside School at Goole, the remedial department at Anthony Gell Comprehensive School in Derbyshire.

Programs enable children to do matching of shapes and letters; to develop their sentence construction skills; they often use a modified keyboard whereby the number of choices was reduced to a manageable number and one position could be a word or phrase rather than a letter; to do early number work and match groups of pictures to numbers; to manipulate real money using a special keyboard. Other programs are

needed, including ones to teach areas of particular difficulty to slow learners, and computerised diagnostic tests.

All the schools have found that use of the micro has had a good effect on self esteem, motivation and the time the child spends on a task. There is, of course, a shortage of good software, and the inevitable problems of one micro in a school not being sufficient. But there is enough evidence to show the usefulness of micros in teaching basic skills.

To give a balanced view it is only fair to mention the reservations held by some advisers and HMI about our lack of knowledge about the place of the micro in the special school curriculum. Its use at the moment is largely confined to the teaching of basic skills. Is this because this is the most appropriate use of the micro or is it because this is the main need/organisation difficult and tend to be used to enhance some aspects of the curriculum?

The answers to these questions are not yet clear although a recent Schools Council seminar made a first

attempt at clarifying the role of the micro in special education. The claim of special education is not that the micro is a panacea, but that it is a versatile and powerful aid for the teacher.

If an innovation is to be adopted it has to be compatible with the system. There are some aspects of remedial education that are particularly conducive to the wider use of micros. The nature of special education is that the classes are small, programmes of work are often individualised, and much of the emphasis is on basic skills. Therefore problems presented by one or two micros in the classroom are less acute and their contribution to the learning process, as a teachers aid, is becoming clear.

Contrast this with ordinary education where larger classes follow a syllabus often constrained by exams. One or two computers make classroom organisation difficult and tend to be used to enhance some aspects of the curriculum.

A factor relevant in schools for the physically and sensory handicapped is that it is accepted that technology has

a role to play. Although micros cannot yet be considered cheap they compare favourably with many items of equipment currently viewed as necessary in such schools.

When talking about their experience of using micros with children with special needs teachers tend to refer to certain key factors such as the motivating effect which is apparently not transitory. Moreover there is the value of immediate feedback to pupils and teachers, the contribution of graphics and animation to the learning experience, the increase in the pupils amount of work and experiences, and the self esteem that resulted from the less able child's work being as good as anyone else.

It could be argued that taken separately these advantages could all be achieved by various other methods. The strength of microcomputers is that it offers them all and thus appears to be a unique teachers' assistant, able to conduct a dialogue with children in a 'one to one situation'.

There are areas where we know micros are of use, for example, com-

munication aids and in the teaching of basic skills. There are areas that we feel confident about, for instance diagnostic testing and there are areas where its use may be quite limited, for example in the wider curriculum, although it may contribute indirectly by teaching the basic skills more efficiently and thus allowing more time for this to be taught by other more appropriate means. The need in the immediate future is to build on our current knowledge and to set up an information system so that each school thinking about using a micro in the education of children with special needs does not have to start from scratch.

The other crying need is for good software. As a first step it is essential that those involved in special and remedial education ensure that the regional plans for curriculum development under the MEP include a special education component.

The question is not what is the need, but how will it be met?

Mary H. Hope is a Programme Manager with the Council for Educational Technology

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extra Phase two in Scotland

Iain Thorburn on the Scottish Microelectronics Development Programme

A couple of days after the Government announced its Micros in Schools Scheme, David Walker, director of the Scottish Microelectronics Development Programme, said: "The basic difference between Scotland and England in this field is that they are announcing what they intend to do when we are at the stage of recording what we have already done."

The SMDP's "Strategy and Implementation Paper" (available on request from the Scottish Education Department) is the proof of Mr Walker's claim. It was published on the day of the Government's announcement, and it records the fact that Phase One of the Scottish scheme is long over, and Phase Two well into its stride.

Phase One began in 1979, funded by £320,000 of Government money. Schools and colleges were invited to submit proposals for projects, the hardware to be supplied on loan by SMDP. Bids totalling more than £2m were received. The SMDP supported some 68 projects in centres throughout Scotland, from Orkney to Strathclyde, and a hardware and software base was established in Glasgow.

Phase two of the SMDP began in April, 1980 - a four-year £1m research and development programme, Scotland's share of a £10m UK project. The DES Microelectronics Education Programme did not get going until November.

By the time the Department of Industry announced early in April a scheme to put a microcomputer into every secondary school by the end of 1982, more than 50 per cent of Scottish secondaries already had micros and two regional authorities already had them in all secondaries.

As an example of the speed of development in Scotland, Mr Walker cites 'Thydside region' - his previous employers. When he was seconded in September, 1979, to survey microcomputer systems in schools for the infant SMDP there was only one in 'Thydside'. Six months later Thydside had taken the decision to put microcomputers in every secondary school. Nationally, between the survey and April, 1981 - a period of some 18 months - the figure for micros in schools and further education has leapt from about 120 to about 500.

But the real gauge of progress is software, not hardware. Software from the 68 SMDP-supported projects has been coming into the SMDP base for a couple of months now, and it will be freely available within Scottish education. It will be tested and evaluated by other centres of working groups, which will be part of the SMDP's two-level library. The upper level will consist of packages considered educationally valuable; the lower, of contributed programs for which no guarantee will be given.

Already, SMDP has acquired under licence the materials produced by the Minnesota Educational Computing Consortium, which David Walker describes as the best available in the USA. In addition, all materials from the now defunct International Centre for the Use of Computers in Secondary Education - which was based in Edinburgh - are now being evaluated for microcomputer applications. SMDP also has material from other British projects based in Pite, Hatfield, the ILEA, etc. The SMDP information network will be linked up with the MBP through a GPO line - and the SMDP intends to communicate with its own scattered constituency through Prestel.

David Walker is far from being the stereotype braggart Scot, but he does take quiet satisfaction from outlining Scotland's lead over England. The solid and rapid progress of SMDP, says David Walker, is largely attributable to the compactness of the Scottish education system. Everyone knows everyone else, and there are only twelve education authorities to deal with.

At school level SMDP is developing software in almost all secondary sub-



jects - and in remedial and special education. It is also involved in projects in school administration and community education. Six sets of microcomputer equipment have been allocated to the community education project and will be located in places such as Citizens Advice Bureaux.

The main areas in which the micros will be used are information retrieval and programmed learning. The project, incidentally, will be helping to fulfil one of SMDP's main aims - promotion of general awareness of computers, among adults as well as school pupils. As far as awareness among school pupils is concerned, Mr Walker is particularly pleased with the response from rural areas.

SMDP programs will normally be developed in a dialect of BASIC to simplify transfer from one system to another, and discussions on this have already been held with MBP, CET, NCC, the Birmingham Education Computer Centre, Hatfield Poly-

technic and ILEA. A standard form BASIC will be recommended to SMDP project centres before the end of June.

The 68 project centres are developing projects in some 90 schools. The fact was to back proven ability in the field, but this does not mean SMDP disregards other initiatives. SMDP is looking for big results in every case - some projects, for example, with the blind and deaf apparently have developments can be of immense importance.

SMDP has ten programmers and a mobile equipment repair service in the disposal of project centres. But a David Walker sees it, the Program's most crucial function is in co-ordinating and collecting software. In the next six months he expects a major power coming from the program's Glasgow base.

Further information may be obtained from SMDP, 74 Victoria Crescent Road, Glasgow G12 9JN.

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Micro market

Paul McGee surveys microcomputers which are suitable for schools

At present about half the secondary schools already possess a microcomputer and the Department of Industry initiative should ensure that the remainder have one by April 1982. The choice of second and subsequent microcomputers will not necessarily be the same as the choice of the only machine although compatibility which is an important consideration, which is comforting to those schools who wish to take advantage of the DoI scheme but do not agree with the limited choice of machine.

The choice of further machines will be affected by the intended uses for them, for example teaching programming, computer aided learning (CAL), keyboard or information word processing or information retrieval. Account has also to be taken of the number, age and experience of prospective users.

The DoI scheme is limited to the Research Machines 380Z and the BBC/Acorn Atom, costing £1680 and £260 respectively. The 380Z comes with dual floppy discs, monitor, BASIC, assembler, CPM, text editor and high resolution graphics. This is very similar to the systems which the DoI gave as the major prizes in its competition last summer. The system still needs a printer, preferably one which can produce high resolution graphics and two possibilities are the Epson MX80FP-2 or the Selkosh G80, both available from Micro Peripherals. This arrangement is probably the best for a school which had only one machine and a definite interest in CAL and Computer Studies to examination level.

The other choice is the BBC/Acorn Atom. The original Atom is a very economical machine which suffers from a very non-standard BASIC. The redesigned system will have a new structured BASIC to fit in with the BBC/NEC series and other teaching materials. The basic configuration has 16K RAM (upgradable to 32K), BASIC in ROM and high resolution graphics with up to 640 horizontal points in black and white and 160 for colour. It will need a television, a printer and cassette recorder for program storage.

The Acorn Atom has several exciting features which will make it attractive to schools. For £100 another device can be attached to enable it to accept CEEFAX and ORACLE and thus to copy programs being transmitted into its own memory. This means that free teleconferencing will be available to schools. Another device will enable the Atom to act as a Prestel receiver and thus copy programs which will be made available, free or charged, on Prestel. For a further small additional cost the machine can be linked into the Acorn Econet system which allows many of these reasonably priced devices to share peripherals such as disc units and printers.

For a school which is just beginning, and can afford it, the 380Z offers represents very good value. Its robustness, flexibility, versatility and high resolution graphics make it the obvious choice for a school wanting a wide variety of applications from one machine. Its obvious disadvantages are its price, its lack of BASIC in ROM for beginners (this can be overcome to some extent by starting with discs) and its incomprehensible manual.

The BBC Atom seems to be a good bet for teaching programming and where it is important for many pupils to have access to reasonable quality keyboards. In the not too distant future the Econet could be the way to teach the majority of pupils to program. The disadvantage is that all the initial production will go to the BBC and the DoI which is giving 700 of them as consolation prizes in last summer's competition. If there is another DoI competition this summer, most people who order them will be lucky to see the machine before the next financial year. We will have to wait for a more detailed specification, including the specification of the structured BASIC, before it is possible to judge whether it is worth waiting, whether it is worth waiting.

Undoubtedly the most popular school microcomputer is the PET. Educational Computing estimates there are about 3000 in schools and colleges compared to 2400 380Zs. The PET (Personal Electronic Transactor) was originally offered as an 8K machine with a rather strange keyboard. This, and the fact that so many demonstrations seemed only to feature its skill with playing cards, seems to have unreasonably prejudiced many against it. The current popular model has 32K RAM with 14K BASIC in ROM. The ROM BASIC has been a major selling point for cassette users and the ROMs are more exchangeable than many people think.

Beginners also like its compact design, lack of spaghetti wiring and easy, if slow, program loading and saving. The PET is manufactured by Commodore and sold through dealers who usually provide service. There is a large amount of educational software of enormously varying standards available, including most of the material available for the 380Z. One mixed blessing is that many firms offer additional peripherals and even boards which fit inside the computer for facilities such as high resolution graphics. The drawback is that this makes software portability more difficult. With its IEEE interface the PET has often been very popular for control applications.

The next most popular machine is probably the Tandy TRS-80 or the cheap copy called Video Genie. Tandy are unusual because they are sold mainly through high street shops although they have now set up an organisation called TEAM to exploit the local authority market. Tandy offer a sixteen user network for under £10,000.

TEAM runs Saturday computer workshops for teachers in seven major cities and offers special discounts on quantity orders and planned purchases. Several local authorities in the Midlands have standardised on the TRS-80 but there is a lot of complaints about incompatibility between Model 1 and Model 2. The Video Genie which is cheaper but will still run most TRS-80 software is available from Lowe Electronics.

The fourth most popular microcomputer for schools is the Apple. In America education accounts for 25% of Apple sales. It uses an integral keyboard and ROM BASIC but has a separate television - usually colour. Early marketing unfortunately put too much emphasis on colour and paid too little attention to its many other good features.

Apple offer many peripherals such as voice input and output, graphics tablet, music synthesizer, high resolution colour graphics and printer to match. The graphics has the ability to store a created picture and move it around the screen while it is very useful in animation work. Much of the popular English CAL work is not available on the Apple and the lack of lower case letters in the basic configuration has disappointed many teachers of younger children.

There have been ups and downs with the Apple dealerships in this country but Microsense eventually won the master dealership, only to be taken over by Apple. Microsense offer generous discounts to schools for initial purchases.

Another machine which initially looked promising but has failed to attract much attention is the Edy Sorcerer which is available from Griffin and George or Liverpool Data Products. The Sorcerer uses ROM RACS which allow the machine to use of different languages by plugging in packs of read-only memory which gives the advantages of ROM reliability but keeping flexibility. It also has the facility for the user to define up to 128 graphics symbols.

Another interesting machine is the DAI from Data Applications which has 24K ROM BASIC and 48K RAM for £595. It has the unusual option of a hardware matrix processor (£149) and has high resolution colour

graphics as standard. The last machine in this class is the Sharp MZ-80K which looks very similar to the PET but has integral cassette recorder and BASIC on tape.

In a different class are the Sharp PC1211, the Sinclair ZX81 and the Newbury Newbrain. The Sharp PC1211 is a small hand held battery operated device with approx. 1.5K user memory. It is programmable in BASIC, has a simple but effective editor and a sixteen character one line display. The BASIC is generally satisfactory, if a little slow at times, and at about £80 it allows whole classes to program. One section of the keyboard can be designated with special functions, such as the BASIC keywords, and a template is provided to cover the original uses.

Its main disadvantages are that the keys are very small and fiddly and it is impossible to display a screen full of information.

This defect might be overcome to program debugging by the amazing little printer that Sharp are developing to fit onto the cassette interface. The fact that the machine is battery operated avoids the difficulties of wiring up a classroom and also preserves the program when the machine is switched off. This makes it possible to write programs and test them e.g. while sitting on the train or from work. Tandy sell the same machine with a different cassette interface.

The Sinclair ZX81 improves on the features of ZX80. It has a similar but better touch keyboard (which people tend to love or hate depending on what they are used to) with single key input for BASIC keywords. The new version performs decimal arithmetic to 9% figure accuracy. It needs a television and a tape recorder for storing programs. On the television it displays 24 lines of 32 characters in black on white with some graphics symbols.

The whole screen can be copied onto the Sinclair printer with the single instruction COPY. The 1K internal RAM can be extended to 16K by an external addition for £50. The annoying flicker on the ZX80 can be avoided by running the program NORMAL instead of FAST. It is very impressive value at £70 and has great potential where many pupils need to program. The greatest problem is the number of televisions needed.

The greatest disappointment is the Newbrain which has the best features of the Sharp PC1211 and the Sinclair ZX81. It is designed to run fast BASIC with up to 32K, has a built-in display and TV output. The cheapest mains version is £159 and the battery operated version costs £259, all with high quality professional keyboard. It has been overdue for about four months and there are now rumours that Newbury are looking for someone else to manufacture it.

If it can be produced quickly it would have a great impact on educational computing, otherwise its market will be taken by the Atom, Sharp and ZX81.

There are some exciting new developments on the horizon. Research Machines will soon announce both their ring system and a new machine which will be a scaled down version of the 380Z for independent use or a part of the ring. PET will be offering the VIC colour computer for about £200 with connections to a domestic television.

This brief summary has shown some of the machines which schools might consider. It is always sensible to check whether the L.e.a. has a purchasing and maintenance policy or whether neighbouring schools have chosen particular machines. The final choice should not be made without actually using the machines as it is surprising what impact the style of keyboard, size of characters on the screen or the portability of the equipment can have on the final choice.

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To organise writing workshops to produce Science Units and be responsible for

writing and arranging for the testing of such materials; to supervise the science activities of Correspondence Course; to help the Coordinator with the general administration of the Correspondence Course; to act as Chief Examiner for the Science component of this course. Qualifications: Science degree plus a teaching qualification. At least five years teaching experience is essential. A higher degree in either science or education and experience of production of correspondence materials are desirable.

Key English Language Teaching Scheme.

The KELT Scheme is part of Britain's programme of aid to developing countries under which ELT specialists serve in key posts in 40 countries.

TURKEY

ELT Expert
Preparatory School, Middle East
Technical University, Ankara
Reference: 81 K 25

To evaluate existing materials; to advise on and prepare materials for use in the Preparatory School; to help retrain the syllabus and improve the teaching techniques of language teaching staff; to advise on the improvement of the present teaching system and to take part in co-ordination teaching to gather information for advisory duties.

Please write briefly stating qualifications and length of appropriate experience, quoting relevant reference number and the subject for further details and application form to: Overseas Education Appointments Department The British Council, 88 Davies Street, London W1V 6AA.

Salary: First year £10,000 tax free, then subject to annual increments. Benefits: Overseas allowance; local school fees; superannuation; overseas medical scheme; free furnished accommodation; travel; baggage; annual passage paid leave. Contract: 2 years, renewable. Starting date: September 1981.

IRAQ

2 Teachers of English
The British Council Centre
of English Studies, Baghdad
Reference: 81 D 21-22

To teach English to Iraqi adults from beginners up to FCE level, including English for mixed groups and English for special groups. There will be opportunities for course and material design, teacher training, needs analysis, and video production for suitably qualified teachers under supervision. N.B. The two teachers will cover the following duties which will be divided according to the experience and interests of the appointees. Qualifications: Candidates should be single men or married teaching couples with a degree or teaching certificate plus TEFL qualification, with RSA as minimum, and at least one full years' TEFL teaching to adults. Salary: £7500-£10,400. Tax free. Benefits: Free accommodation; medical scheme; 8 weeks leave per annum. Contract: Two years. Starting date: September 1981.

INDONESIA

Teacher of English as a Foreign
Language
British Council Centre, Jakarta
(Reference: 81 D 08)

The Job: To teach English to highly motivated Indonesian students (who are mostly false beginners) and to professional concerned with Development Aid Programmes, so that they reach the required standard to take up fellowships offered by international Aid programmes for study in Anglophone countries. Qualifications and experience required: Candidates should be graduates with postgraduate qualification in TEFL or RSA with a minimum of 2 years TEFL teaching experience. Previous Asian experience, and work with adults students and EAP an advantage.

Salary: £5442-£7167 p.a. Benefits: Including free shared accommodation; medical benefits; 2 year contract. Starting date: September 1981.

OMAN

Royal Guard Boys Technical
School, Seeb
Reference: 81 A 08

Post: Teacher for Physics/General Science/Mathematics required for September 1981. A residential school for Omani boys related to serving members of the armed forces. During the first year the principal teaching subject will be mathematics. Other duties will include setting up a secondary level physics laboratory and the development of science secondary courses. Qualifications: Candidates must be UK citizens, men only, preferably aged 35-48. A relevant degree, Teachers Certificate and 4 years teaching experience are essential. Salary: Tax free salary RO 850 per month per annum (equivalent £8146 p.a. at RO 810 = £1). Travel allowance RO 60 per month while at post. Benefits: Free fully furnished accommodation with free water, electricity, maintenance; annual increments; 3 months annual passage paid leave; free medical service; 20% terminal gratuity; 3 year contract, renewable and guaranteed by the British Council. Closing date for applications: 22 May 1981.

PORTUGAL

3 Teachers of English
British Council Institute, Lisbon
Reference: 81 D 18-20

To teach English as a foreign language from beginner to Cambridge examination level. Qualifications: Candidates should be qualified UK teachers with postgraduate TEFL, RSA or 3 years relevant teaching experience, Aged 25-35. Salary: 374,268-627,676 Escudos p.a. (€287.5-€481) approximate sterling equivalent. (Under review, and may be increased). Benefits: Free paid; baggage allowance of £125 and displacement allowance of 80,000 Escudos (approx. £478); medical benefits; two year local contract with British Council Representative. Starting date: 1 September 1981.

OVERSEAS APPOINTMENTS continued

BELGIUM

QUALIFIED KINDERGARTEN OR INFANT TEACHER required for 1st and 2nd English in small English school in Antwerp. Primary school, Institute for Creative Design, Antwerp. Salary: 2000 Antwerp, Belgium. Tel: 31-50-55-108350. 311-80

GERMANY

English Teacher required for 1st and 2nd English in small English school in Antwerp. Primary school, Institute for Creative Design, Antwerp. Salary: 2000 Antwerp, Belgium. Tel: 31-50-55-108350. 311-80

JAMAICA

Wanted for 1st September, 1981. Graduate of 12 years schooling, loving subject: PE/Physical Education. Apply to: The Principal, Clarendon College, Clarendon, Jamaica. Tel: 808-2111. For more details of two (2) references. 311-80

MINISTRY OF DEFENCE Service Children's Education Authority Primary and Secondary Schools - Brunel and Germany

Applications are invited from qualified Primary and Secondary Teachers of at least two years experience, who are at present teaching in schools in the United Kingdom, for the following vacancies in Service Children's Schools in Brunel and the Federal Republic of Germany for September 1981. It is emphasized that will not be possible for the Ministry of Defence to confirm the appointment of successful applicants until after 31 May 1981.

1. Reception/Infant - Scale 1 - BRUNEL

Maura School Group 2. An experienced Reception/Infant Teacher is required. The ability to play the piano and to take on the responsibility of music throughout the school is essential. A Scale 2 post would be available for the teacher able to take on the responsibility for Infant and Music Departments.

2. Chemistry - Scale 1 - WEST GERMANY

Kent School (Comprehensive Group 11) Hostair. An experienced graduate Teacher of Chemistry is required to take the subject throughout the school up to and including 'A' level. Combined Science is taught in the Lower School. Willingness to participate in non-residential boarding duties where there is an additional allowance in excess of £1800 is essential in this school. Completed application forms, obtainable from the address below should be returned not later than 18 May 1981. Short-listed candidates will be advised and interviewed at the same address at the end of May 1981.

Conditions of Service

Salary is in accordance with the current Burnham scales plus London Allowance of £769 p.a. Superannuation - normal rights are safeguarded. Foreign Service Allowance - a tax free allowance is payable. Accommodation - is provided rent free. Duration of Engagement - initial engagement is for three years. If applicants should be re-employed in the United Kingdom, Teachers not serving in the Service Children's Schools abroad after the age 50, and therefore the preferred age is under 47 years at the commencement of the engagement. Requests for application forms and further information should be made on a postcard or by telephone to:

Service Children's Education Authority (AW 3211), Schools Branch, Teachers' Appointments Section, IAE Court Road, Eltham, London SE9 5NR

Tel: 01-859 2112 Ext 221 or 238 before 4.30 pm.

English Teachers Overseas

Over £20,000 p.a. tax-free joint income for married couples

Our clients are a major international company in the UK with large contracts in Saudi Arabia which involve the training of Saudi military personnel in various technical functions. There is a continuing requirement for the company to provide English-language tuition for the children of Saudi Arabian nationals in schools at various locations in Saudi Arabia.

Since children of both sexes need to be taught, these posts can most satisfactorily be filled by married couples who are both qualified teachers and have experience in teaching English as a foreign language. Salaries offered will be in excess of £10,000 p.a. This provides a very attractive package for a married couple with a joint income in excess of £20,000 p.a. tax-free. Free accommodation, frequent travel paid leave to the UK, etc. will be provided.

Applications are invited where both husband and wife hold Teacher's Certificates or PGCE/3 years classroom experience in primary schools is required and should include a period in TEFL. Experience of teaching children of foreign nationals would be an advantage.

Interviews will be arranged to suit applicants' convenience as far as possible but initial applications should be made in writing to the address below. Please state any company to whom your application should not be forwarded.

Ms S. J. Edwards,
Davis, Gibson Advertising Ltd.,
2/3 Gough Square,
Fleet Street,
London EC4.



ENGLISH LANGUAGE TEACHERS KUWAIT

International Language Centres Ltd., invites applications from English Teachers, with a minimum of 2 years' experience in TEFL to join an already established language training team. Candidates should be male, of bachelor status and should hold a degree or Cert. Ed.

Contracts are for a period of one year from late August. The basic salary which is tax free in Kuwait is 4,200 Kuwaiti Dinars per annum, with increments for qualifications and experience. Return air fares, relocation allowance, housing and daily transportation to the teaching site are provided free. Paid holidays are six weeks per year, in addition to Kuwait Public Holidays.

For details and application form, apply to: Personnel Department (Kuwait), International Language Centres Ltd., 24 Old Bond Street, London W1. Tel: (01) 488 6487. T89311

OVERSEAS APPOINTMENTS continued

EFL IN SWEDEN

The Extra Mural Board of the University of Stockholm recruits Teachers from September 1st to teach English in towns within the county of Stockholm. Applicants must have a University degree and/or teaching qualification and approximately one year's previous full-time TEFL experience with adults. The work is most suited to young teachers with a minimum of five years full time teaching experience the last two of which must have been in the same institution are invited to apply for the post to post scheme appointment in the United States during the winter term 1981-82. Successful applicants are given a term's leave of absence with pay. A cost of living allowance, maintenance allowances for accompanying children and the full approved cost of the teacher's travel are paid from central government funds.

FRANKFURT

INTERNATIONAL SCHOOL Applications are invited for the following positions for September 1981. 1. Teacher of girls physical education and high school. 2. Teacher of French Middle School. 3. Teacher of Mathematics Middle School. 4. Teacher of Primary School. 5. Teacher of Secondary School. Applications should be addressed to the Headmaster, Frankfurt International School, Am Waldweg 3, D-6070 Oberursel FRG (08937) 311-80

FRANCE

Experienced American teacher of English to 11 level for school in Paris area, September, 1981. Send full CV to: Dr. J. Allen, 17 rue Internationale de St. Germain, St-Louis (American Section), 75104 (0821) 311-80

TEACH FOR ONE TERM IN THE USA - SPRING 1982

Qualified British teacher and lecturer with a minimum of five years full time teaching experience the last two of which must have been in the same institution are invited to apply for the post to post scheme appointment in the United States during the winter term 1981-82. Successful applicants are given a term's leave of absence with pay. A cost of living allowance, maintenance allowances for accompanying children and the full approved cost of the teacher's travel are paid from central government funds.

Further details and application forms can be obtained from the American Council on Education, 100 East 17th Street, New York, NY 10003, USA. Tel: (212) 875-6600. Send your application to: American Council on Education, 100 East 17th Street, New York, NY 10003, USA. Tel: (212) 875-6600. Send your application to: American Council on Education, 100 East 17th Street, New York, NY 10003, USA. Tel: (212) 875-6600.

NEW GUINEA

Fully trained and experienced teachers required to work in Volusia (Papua). Must be very dynamic. Please send curriculum vitae with recent photo to: Cambridge English Centre, Santos Patrocinio 27 - Alivi (Valencia). (05143) 311-80

ROME

ST. GEORGE'S ENGLISH SCHOOL. HMC Independent day school. Co-educational, pupils of 65 nationalities, ages 5 - 18. Invites applications from all qualified persons for the following, as from September 1981: 1. HEAD OF MATHEMATICS. 2. HEAD OF PHYSICS. 3. ASSISTANT MATHEMATICS TEACHER. 4. ASSISTANT PHYSICS TEACHER. 5. ASSISTANT MATHEMATICS TEACHER. 6. ASSISTANT PHYSICS TEACHER. 7. ASSISTANT MATHEMATICS TEACHER. 8. ASSISTANT PHYSICS TEACHER. 9. ASSISTANT MATHEMATICS TEACHER. 10. ASSISTANT PHYSICS TEACHER. 11. ASSISTANT MATHEMATICS TEACHER. 12. ASSISTANT PHYSICS TEACHER. 13. ASSISTANT MATHEMATICS TEACHER. 14. ASSISTANT PHYSICS TEACHER. 15. ASSISTANT MATHEMATICS TEACHER. 16. ASSISTANT PHYSICS TEACHER. 17. ASSISTANT MATHEMATICS TEACHER. 18. ASSISTANT PHYSICS TEACHER. 19. ASSISTANT MATHEMATICS TEACHER. 20. ASSISTANT PHYSICS TEACHER. 21. ASSISTANT MATHEMATICS TEACHER. 22. ASSISTANT PHYSICS TEACHER. 23. ASSISTANT MATHEMATICS TEACHER. 24. ASSISTANT PHYSICS TEACHER. 25. 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